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NEWS IN BRIEF

ICL to expand in Europe?

SEEKING to expand and consolidate its position in Europe, particularly the EEC countries, ICL is making a detailed study of the major markets with a view to possible acquisition or collaboration with European-owned companies.

"There are no deals in progress at the moment," a spokesman told Computer Weekly, "but we are always interested in acquisitions which might further our business, and we want to strengthen our base in Europe."

Banking on 2903s

TWO more banks have ordered ICL 2903s. The New York office of the Banco Totta e Acores of Portugal is to follow the lead of the London office and install a 290,000 2903 when it opens later this year, and the French Credit Industriel et Commercial is to have a 2903 in its London office. It will use an international banking package developed by Arthur Anderson & Co.

B6800 for OUP

THE largest book publisher in the UK outside government, the Oxford University Press, is to acquire a Burroughs B6800 for online working, to replace its ICL 1902T. There will be over 60 terminals in London, Oxford and Glasgow, and the machine will be used for stock and financial control, and also for preparation of the actual text of books.

Paymaster switch

TWO ICL 2800 machines, ordered in 1975 to replace two systems 4/50s (CW, October 30, 1975), are now installed at the Paymaster General's Office at Crawley, Sussex.

'Doctors opposition based on ignorance'—Samet

DOCTORS' opposition to computerised medical records systems was based on emotion and ignorance, said BCS president Professor Paul Samet in a letter to the British Medical Journal.

He was commenting on the discussion about computers and confidentiality at the BMA's recent meeting at Cardiff (CW, July 20) at which 18 motions proposing non-cooperation with computers in various ways, were put forward.

Doctors said they were worried that if patients' records were stored on computers, confidentiality would be lost. In particular, the doctors objected to the DHSS's proposed Child Health system (CW, May 4).

According to Samet, doctors did not understand a word about security of records. They should realise there were many other types of sensitive records that needed careful handling,

and that solutions to the problem had already been developed.

The suggestion that handwritten documents stored in an open folder in a filing cabinet are secure is absurd, Samet said. He added that the only security factor they had was the doctors' illegible handwriting. Computers could provide much better security, he pointed out, by providing extra features such as limited access to certain fields of records to certain people who are excluded from seeing other fields.

Efforts to prevent the combination of records from several different sources were hardly valid for medical records. The potential of computers to help anticipate and prevent epidemics, tragedies such as that of Thalidomide, would be lost, he added.

A questionnaire published in the latest issue of the BMA News Review was described by

Samet as "dull". It was headed, "BMA News Review is seeking the help of all its readers in gathering evidence to support the growing threat to confidentiality of computers."

It asked such questions as "Should doctors be the persons to safeguard the confidentiality of their patients' records? Are you concerned that, without specific safeguards, computerised records may endanger this confidentiality? In view of the increasing use of computers by Government departments, should the Secretary of State continue to have legal ownership of patients' records?"

Samet commented that the questions told what answers to put. He quoted a headline in the British Medical Journal, "Doctors warn computerisation of ethical dangers". There should be another story, he said, headed "Computerisation warns BMS of medical dangers".

US bank blacked in PO dispute

THE Post Office Engineering Union's action in support of a 35-hour week has disrupted data communications links with the London office of Continental Illinois, a Chicago-based banking group.

The links connect terminals in the London office to IBM and DEC computers in Chicago via multiplexer and modem equipment in Brussels.

The bank's new offices had only five lines to single telephones. After an initial delay, the private exchange was connected by Post Office management, and the union blacked the firm. A spokesman for the union said that it would stay blacked until the dispute was resolved.

Lord McCarthy has now concluded his series of meetings with the Post Office and the Post Office Engineering Union, and will present his report to Industry Minister Eric Varley at the end of this week.

So far about 150 employees have been sent home for refusing to install equipment.

Atkinson for DoI

DIRECTOR of the Central Computer Agency, Roy Atkinson, is to be transferred to the Department of Industry in September. He will be replaced at the CCA by Gerald Watson, who at present runs the agency's Policy Planning and Financial Division. Details of Atkinson's new job at the DoI have not yet been released.

Grundy interest in NPL teaching aid

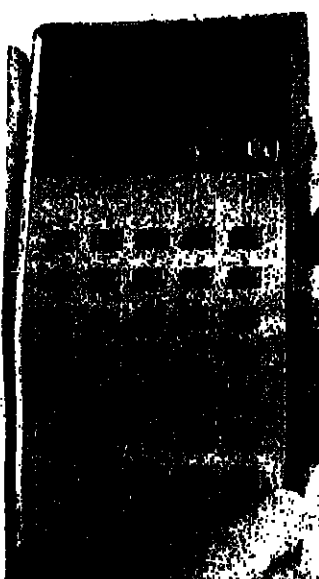
THE electronics and engineering group, Grundy, is producing six prototypes of Muppet, a micro-based system developed at the National Physical Laboratory, Teddington. It is claimed to be the "first hand-held teaching computer."

Grundy, which has a minority interest in Data Recording Instruments, the computer peripheral manufacturers, has also said that it is interested in the commercial production of the device. An interactive system that can be used for such applications as language tutoring, it is one of a number of important developments of the NPL team, headed by Dr Christopher Evans, psychologist and computer scientist. These include the Mickle Hospital patient interviewing system (CW, February 17) and Mavis, the micro-based aid for the severely handicapped (CW, September 15, 1977).

Commenting on the future potential for "personal tutors" like Muppet, Dr Evans said that the next decade could see such demand for them that unit costs could approach £10.

"There is no way the world can afford to give every human being a personal teaching service," he said. "At present, training teachers is expensive and once qualified, they have to time-share their talents among hundreds of students. I believe that in the early 1980s, there will be an immense number of Muppet-like systems in use supporting teachers."

Muppet consists of a pocket-calculator type unit with a one-line alphanumeric display. This has 10 digits and can handle all 26 letters of the alphabet and numbers from 0 to 9. In addition to these there are four extra functions on the keyboard: Space, Go, Back and Eject. Based on an Intel 8085 microprocessor, Muppet has 256 bytes of RAM and 4K of EPROM; the EPROM being



Muppet... claimed to be the first hand-held teaching computer.

divided equally between program and data storage.

Dr Evans, who originated the idea for the teaching computer said: "It took less than a year and under £1,000 to develop Muppet. This shows the tremendous speed at which you can work with this technology." The NPL team was multidisciplinary, drawing its experience from computers, psychology, and ergonomics. It was this, feels Dr Evans, that enabled them to get around the problems of presenting alphanumeric information on a one-line display and designing a keyboard that is readily usable by anyone.

The keyboard has been arranged so that the vowels fall across the top five keys — a suggestion made by colleagues at Loughborough University — and a design that has brought some encouraging results. "It appears to be intuitively simple to operate," said Dr Evans. "People can begin typing in a few seconds."

Basic research into the pro-

blems of displaying interactive alphanumeric text on a one or two-line basis was carried out by Brunel University student Hazel Bennett at NPL last year, when a Termiflex hand terminal with a two-line LED display was linked to the lab's Digital Equipment PDP-11 and a simulation program designed.

With just 20 keys and three shifts, operation of the terminal was less than fluid, but it proved that useful information could be provided on a restricted display.

On the prototype model, a French vocabulary program has been loaded on to the EPROMs together with an automatic, albeit limited, English/French dictionary. However, as Chris Goss, the consultant and software designer who built the prototype says, the potential for Muppet's capabilities is enormous.

"There would be no problems in expanding Muppet's size to something like 8K or 10K right away," he said, "and with bubble memory we could extend this still further."

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Briefing

Fairchild and GEC join up

A JOINT company to make microelectronic components is to be set up by GEC and Fairchild. This has been agreed in principle and full details are expected to be announced next week.

The new company will have a UK manufacturing base, while product development will be carried out in the US. Fairchild makes a wide range of semiconductor devices, but the new company is likely to concentrate on memories and microprocessors.

The main Fairchild devices in the micro market are the 3870 8-bit and the 8440 16-bit units. The latter is still the subject of a lawsuit by Data General (CW, September 15, 1977).

Impact on Europe

THE director general of the Computing Services Association, Alan Benjamin, is to talk to an all-party group of the European Parliament later this year on the needs of the industry and the impact of information technology in general.

Colossus launch

THE new 22-bit mini line due next month from Perkin-Elmer's Interdata division, exclusively revealed in Computer Weekly (May 25), is expected to be built around a 40 Megabyte bus and may have a virtual storage operating system. Code-named Colossus, the new machine will use discs from Perkin-Elmer's Wango division and displays and printers from the Terminals division.

Research shift

RESEARCH spending by the Department of Industry is shifting slowly from aircraft and space to computer, electronics and engineering, according to the Department's annual R&D Report. Though the largest slice of the £125 million in 1977-78 (£187 million estimated for 1978-79) still goes to space technology, computers and electronics accounted for £8.9 million in 1977-78, and will take £12.4 million next year.

Joint venture?

THE National Physical Laboratory is considering collaboration with Logica, GEC, Perkin-Elmer or Plessey for a new venture in its pioneering packet-switched network. Full report, page 11.

Wordplex

In the news synopsis on the front page of Computer Weekly this week (August 3), there was a reference to Wordplex, the word processing equipment manufacturer. We understand, with a view to the statement, "The Development Corp has been set up as the vehicle for the word processing organisation."

It is not clear that the statement is true, but it is true that Wordplex, Logica and ACS are merging in order to make it an attractive proposition. This is one of the points in a call for a change in the grading structure of the industry.

IBM groups may oust plug-compatible users

THE London-based bureau, Teamco, could be one of the first users of an IBM plug-compatible CPU in Europe to get the cold shoulder from IBM user groups. Teamco has replaced its IBM 370/155 with an Intel AS/5 and has written to Guide, the group concerned with large users, and the IBM Computer Users Association, asking if it can still be a member of these groups.

UK correspondent of Guide, Barry Aldred, of Southern Gas,

told Computer Weekly that membership of Guide would definitely not remain open to users that replace IBM processors with plug-compatible machines. "Allowing users that do not have an IBM processor to stay in Guide would affect our relationship with IBM." However, he added, "We would only allow membership to be retained in special cases such as where a particular user is a positive benefit to Guide."

He said Teamco might qualify as a special case because its parent company in Norway runs an IBM 370/155 and could sponsor its UK subsidiary.

Another Intel user, Unilever Computer Services Ltd, which has three Intel AS/5s, two installed and one coming, told Computer Weekly that it would continue to qualify for Guide because it still had an IBM 360/65 and whether or not it remained in Guide could affect its choice of a

replacement.

The IBM Computer Users Association will probably discuss Teamco at its council meeting on September 12. One leading member of the association said that it could be a heated debate because any user of an IBM computer, including bureau customers, is eligible to join the CUA and that to exclude users of IBM compatible kit could be seen as unreasonable.

The position of plug-

compatible users in the leading European IBM processor group is also uncertain, although its US equivalent, Shure, voted last year to exclude non-IBM users and one Amdahl user understood to have been excluded.

Intel users in the UK, about 10 at the moment, are setting up their own user group. This, it is claimed, will be more independent of Intel than Guide and Shure are of IBM.

EEC initiates software study

By Peter Hewitt

MAJOR studies in the field of software portability, including proposals for a standard European systems implementation language, are to be initiated by the EEC by the end of October. The three studies, for which invitations to tender were issued early in July, also include an examination of the feasibility of a common software interface for minicomputers, and an investigation of the need for new software conversion tools.

The projected European Systems Language, ESL, is intended as a portable tool for implementing software at a level between that of applications programs and the operating system. Specific applications identified by the Commission include the construction of management information systems, database management systems, and information retrieval systems.

By identifying basic common functions, such as scheduling, supervisory, and monitoring functions, as well as higher level functions, such as communications handling, it may be possible to establish a common function set and subsequently a common software interface.

Such a standard interface would be an ideal basis for a standard job control language. **Turn to page 18**

The ESL may be an existing language, a development of an existing language, or a new language, according to the tender documents.

Described as preparing ground for future standardisation, the study of the feasibility of a common software interface is targeted at defining a common set of functions for minicomputer operating systems.

By identifying basic common functions, such as scheduling, supervisory, and monitoring functions, as well as higher level functions, such as communications handling, it may be possible to establish a common function set and subsequently a common software interface.

Such a standard interface would be an ideal basis for a standard job control language. **Turn to page 18**

MoD step towards standard

A FURTHER step in the standardisation of real time defence computing is understood to be under consideration by the Ministry of Defence. If implemented, it would require all future applications to use a software system called Mascot, originally developed at the Royal Signals and Radar Establishment.

Until now, contractors have been directed to consider the use of Mascot but have not been **Turn to page 15**

South African police decide on ICL 2900 to administer pass laws

AFTER going out to open tender, the South African police force is reported to have decided to replace its existing ICL computer with a 2900. The new computer is said to be intended for use in part to administer South Africa's pass laws, which regulate the movement and employment of Africans within

the Republic. The only ICL computer previously associated with the pass laws is a 1804E, installed in 1968 with the Department of Bantu Administration (CW, September 13, 1978).

All companies active in South Africa apart from IBM are reported to have bid for the contract.

However, earlier this year, the US government imposed restrictions on sales of US computers to the South African defence and police forces (CW, March 16), effectively barring any US manufacturer from completing the order if it had won the contract. **Turn to Page 16**

NCR COM expansion with Quantor takeover

ONLY two weeks after the announcement that Agfa-Gevaert was taking over the marketing of Quantor computer output microfilm recorders in Europe, NCR (CW, July 27) has announced that it is acquiring Quantor NCR in the UK says that if the deal goes through it expects to continue selling Quantor systems in Europe.

NCR and Quantor have reached an agreement in principle under which NCR would acquire Quantor for \$7.5 million in cash. The acquisition is subject to approval by the shareholders of Quantor and by the boards of both companies.

Chairman of NCR, William Anderson, said that the takeover would provide the base for expansion by NCR in the micro-

graphics and related fields. Quantor, based at Mountain View, California, turned over \$15,524,000 in the first nine months, ended April 30, of its current fiscal year.

A spokesman for Agfa-Gevaert at its Antwerp head office said that he had not been notified by Quantor of any change in the agreement signed between the two companies.

COMPUTER WEEKLY'S INSIDE NEWS

TORY WAY WITH MICROS

If the Tories win the next election the support schemes for micro manufacturers with £100 million of investment by the Industry Department, will be maintained. But a very different approach to involvement in industry would be initiated. See page 31: Keith Joseph in an exclusive interview with Martin Page 4

MANAGEMENT KNOW

Full membership of the BCS should indicate proven management ability in order to make it an attractive qualification. This is one of the points in a call for a change in the grading structure of the industry. **Page 2**

OPS' CAREER PATHS

The career path for most operators is short and the range near the top of the ladder is quickly reached. That's where the frustration of sitting waiting to move into the top positions. Op Spot suggests how realistic career paths could be constructed. **Page 8**

ALSO...

Computing on professionalism
Focus on the DIY OPM
Computers find line-up
BCS change of grading call
Downside by the
Towers of Babel
Projects not settled

New storage method	8
IBM's methodology	8
Software File	6/7
Programmer Notes	7
Op Spot	8
Micro news	8
TUC to debate micro	9
Letters to the Editor	9
People in the news	10
Disc dates	10
NPL new network plans	11
Market explosion in graphics	12
ICL shares peak	12
CompuShare 2900 essay	13
Chips in the news	18
The Sales Bit	27
The Fax Bit	28
Thames at BCS Headquarters	40

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APPOINTMENTS: Pages 17-39

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Design Brief

Micro Logic is Data Logic's microprocessor division. They apply microtechnology to real situations. They advise, design and assemble. Almost certainly, if anything can be done with micro, they can do it.

One of Micro Logic's clients had a very special requirement. One hundred portable systems, each to contain a processor and store, a floppy disc drive, a visual display unit with keyboard, and a printer. Why so special? Because the application called for each unit to weigh less than 20 lbs and to fit into a container no bigger than a standard briefcase.

Microprocessors open up completely new areas for computing. But they demand a whole new way of thinking. Micro Logic knows how to think small. And creatively.

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GILB'S MYTHODOLOGY

Professional challenge of 'good' programmer

TRADITION dictates that a good programmer is capable of producing error-free programs, in a short calendar time, which run very quickly in operation and which take little primary memory space during execution.

Unfortunately tradition is rarely a useful guide when applied to a rapidly changing set of human and machine economics.

Let me give my particular definition of "programmer" for the purposes of this discussion without pretending that it is the "right" definition for the whole world.

A programmer writes source code for machine interpretation, and carries out a varied set of associated tasks in order to arrive at the source code and to verify reasonable correctness and future usefulness of the programs.

The programmer is not primarily a designer of the system, but is primarily the function that translates a reasonably detailed design into a practical working program and associated test data, documentation and control statements.

This above definition does not preclude the programmer from performing application analysis, system design or project management — but these are other roles, which I am excluding from this discussion.

Now, what is a "good" programmer? My general answer is one who can translate the system specification into a working program and meet any feasible specified set of goals and constraints.

Notice that I did not say anything about getting the job done quickly, or writing elegant structured logic. The list of potential programming goals and constraints may be long and varied from time to time. The goals and constraints can vary in degree and as to which are specified at all.

The goal/constraint list might include such varied factors as ease of expansion of logic in the future; maintainability; automatic recoverability from error situations; and degree of automatic testability.

This list is in no way intended to be complete, but only to stimulate us to remember some of the attributes which a programmer might be expected to produce.

Notice that I have not included space or speed requirements, partially because they are obvious, and partially to dramatise the point that they may not be critical to a given application.

The better a programmer is, the better he or she can respond to any set of requirements for program quality, and

to any set of levels or degrees of those qualities.

The varied requirements have a staggering number of permutations. The professional programmer must be prepared to learn a very large number of technological approaches for constructing programs to meet these requirements.

The programmer must be prepared to update this knowledge as new methods and techniques develop, and this is a staggering task which even at present requires the use of a handbook of current practice and products, rather than any attempt to learn it all by heart.

I realise that many programmers' real world is limited to getting the functional applications requirements apparently working in a minimum of time, that they are too

intended to be complete, but only to stimulate us to remember some of the attributes which a programmer might be expected to produce.

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dogmas of structure or testing or documentation or language, but who is prepared to make the fullest possible use of the known programming technology in order to meet the quality requirements of the users — however unusual these may be compared to the run-of-the-mill program.

The "good" programmer is fully aware of the tools of the trade, and their limitations. He or she is able to "know what they do not know" and admit it to others — and then to enhance their knowledge by looking for answers. Becoming a "good" programmer is a continuous professional challenge.

Old methods never die....

RONALD WARMINGTON'S remarks (CW, July 13) on my "Verification is dead — almost" column (CW, June 15) are most welcome. I cannot disagree with the points he makes and find his examples of the limited survival of verification most useful.

I would particularly like to thank him for bringing up the aspect of fraud prevention. I must admit that I was not conscious of this aspect of verification. I was engrossed in the cost/effectiveness aspects.

It would be most interesting if Mr Warmington or other readers would care to comment on their experiences with multiple person data entry verification techniques as a fraud prevention and detection device. In particular, I should like to see this compared with the option of using automatic checks on a single human data entry operator.

Certainly my hypothesis was rather strongly worded in an attempt to provoke reevaluation if we are using it extensively. I don't think it will ever totally be obsolete, since it probably has a set of properties needed by special applications, which is a better alternative technique for that application. Old techniques, like Old Soldiers, never die, they just fade away.

GIM offers 32K ROMs

TWO versions of a 32K bit ROM, offering 480 and 3600 nanoseconds access time respectively, have been added to its range of memory products by General Instrument Microelectronics. Known as the RG-3832, the ROM is a fully static device that can be used to replace directly two 16K parts without recourse to redesigning. According to the company, the ROMs are available in a wide range of packages.

SOFTWARE FILE-1

Buffer to eliminate printing bottlenecks with teleprocessing

WITH the addition of remote printer buffering to its IBM replacement TP monitor Thirst, Brown's Operating System Services aims to eliminate a major bottleneck associated with remote printing to IBM 3270 or equivalent printers.

With most TP monitors, remote printing is slowed down considerably by the inability of the printer to buffer transmitted data while it is printing. The printer, able to perform only one job at a time, has to wait to receive a complete block before it is able to print and therefore never reaches maximum printing speed.

With the new Thirst feature, a user can designate as a buffer any device which is attached to the same control unit as the printer. The designated device, for example a display, takes over the job of receiving the transmitted data.

Developed in the UK and available in the UK and Europe for the last seven years, Thirst has been notably successful in achieving fast response times in

Shrinking data storage for IBM OS users

A SOFTWARE product introduced to Europe and the UK by Informatics SA offers IBM OS users substantial data storage and transmission economies as well as an unusual approach to file security.

The system, Shrink, provides generalised routines for data compression and encryption. It works by analysing each file to identify the most frequently used byte combinations, which are then coded as bit patterns.

The recording is said to be able to achieve major savings in storage requirements, typically reducing a commercial application file to between 20% and 40% of its original size.

As well as reducing online storage needs, the compression

of data can also reduce line and modern requirements and costs in computer-to-computer communications and data transmission. Similar savings are expected in channel utilisation, reducing turnaround time on I/O bound jobs and improving throughput.

Security benefits arise from the fact that Shrink encodes each file uniquely. Thus even if data is stolen, it becomes meaningless without the system's decryption keys.

Shrink is accessed by Cal commands incorporated into application programs after standard read/write statements. Said to have low memory and execution overheads, the system can be specifically instructed to leave record key areas untouched.

Real time disc subsystem

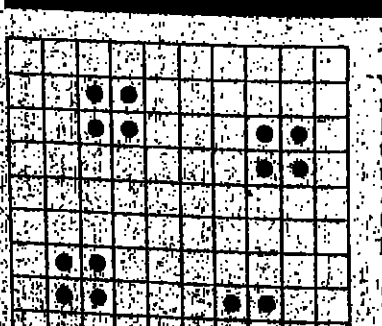
A DISC subsystem for use in real time applications based on the PDP-11 is being implemented by Gemini Industrial Systems for ICI. It is designed for systems in which limited core store is available for sequencing programs. The disc subsystem allocates sequences of programs a priority according to their rate of use and stores them on disc. Those with high priority are permanently loaded into memory, while those with lower priority are overlaid into memory as required.

The system is for use with a process control package written by ICI in RTL/2 for batch processing. Gemini's plants, Gemini UK has been closely involved in the development of the package, which uses ICI's multi-tasking operating system, MTS/37.

Mid-Cheshire firm

CLAIMING to be the first software house in mid-Cheshire, a new firm, Pentagon Computer Services, was formed in June. It said it has "considerable experience" of IBM, ICL, and Burroughs systems but plans to concentrate on specific mini and micro market sectors. Its offices are at 390 High Street, Warrington, Cheshire. Tel: 08065 64554.

Puzzler



THIS diagram shows the only way (not counting rotations and reflections) to place 16 knights on a 10 x 10 board so that all unoccupied squares are under attack by at least one knight. There is no way to do the job with fewer than 16 pieces.

This week's problem is to carry out the same task on a 12 x 12 board, using the minimum number of knights. See page 37 for the possible configuration.

SOFTWARE FILE-2

BCS Codasyl debate

A conference on Codasyl database developments is to be held by the British Computer Society at the South Bank Polytechnic in London on September 4. The speakers, members of the BCS Codasyl DBAWG and ODLC, will include Ed Toner of Arthur Andersen and Roger Togg of Secon.

The registration fee is £20 for BCS members (£10 for students members) and £25 for non-members. All delegates will receive a copy of the 1978 Codasyl Data Definition Language Journal of Development.

Pentagon funds SIL based on Pascal

THE US Department of Defence is funding the development of the first compiler for a new systems implementation language based on Pascal. Called Euclid, the language is specifically designed for writing systems software that must be verified.

A major objective of the research is to improve the reliability and security of system level software, by facilitating the production of code that is

Gross refs in preprocessor for DEC Coral

A PREPROCESSOR for Coral and a file handling system, currently written in DEC Coral for the PDP-11, are the latest packages to be announced by consultants Brampton and Brampton, previously based in Lewes, Sussex.

The Coral preprocessor, itself written in DEC Coral, offers three main facilities: source code reformatting; the generation of cross reference listings; and the ability to

code Coral reserved words in shorthand form. Source code reformatting, which is thought by some to be a function better left to the computer than to the programmer, is designed to show clearly the block structure of the program by the use of systematic indentation.

Statements at the same logical level all begin in the same column and labels are

left-justified to the edge of the listing. Similar processors have been developed in the past by the Royal Signals and Radar Establishment, Malvern, and by Stephen Howe (Consultants) Ltd.

The new package is notable for providing in addition a cross reference listing. This summary, output as a comment after the FINISH statement, lists all identifiers and labels in alphabetical order with each occurrence documented by line number. The software is sold by Brampton for £500.

The other new package, Varfile, provides RSX-11 and IAS users with a flexible filing system said to be particularly suitable for online and data base applications. It can be accessed by any language running on the PDP-11.

Particular features include support for variable length records and variable length keys within one file; a facility for generic operations, using partial keys; and the dynamic mapping of user files onto logical units.

Benefits claimed for the system include fast operation, efficient use of disc space, and easy file handling. The package, which is also being implemented in PL/I for IBM 370 systems, is available for £4,000 and can also be rented.

● Brampton and Brampton, which also markets aids called Cosh and Coin for Coral string handling and interactive testing respectively, has moved this year to: The Old Thatch, Cardinals Green, Horsehead, Cambridge. Tel: 0223 891725.

Online maintenance of Fleet program library

AN online version of the Fleet program library maintenance system has been announced by SDI for IBM DOS and DOS/VS users.

Fleet Online allows programmers to update source programs interactively and examine the output from compilations and test runs on a video terminal before routing output to the line printer.

Users of SDI's Grasp may in addition use the system to submit jobs to the batch input queue.

The software runs in a 64K batch partition and is thus not dependent on a TP monitor. Up to seven display screens can be handled simultaneously, which may either use individual libraries or share program libraries.

Aussie DBMS for NCR machine is launched

A DATABASE management system that runs on a range of NCR machines has been developed by Stanwright Consulting Services, an Australian software house based in Melbourne, according to published reports. The system, Access, is said to be available for NCR Criterion and 8400 series equipment, as well as on the older Century series systems. It is thought to be only the second DBMS supported on NCR hardware, the other being Cincom's Total.

The provision of aids for converting from Total suggests that at least part of the market anticipated is formed of existing Total users. In addition to being logically compatible at file level, the system offers a bridging facility such that Total application programs do not have to be recompiled on changing to Access.

Said to offer features including easy-to-use data definition and data manipulation languages, extensive run-time diagnostics, and dynamic buffer allocation, the system also provides utilities for database back-up and restore and database recovery.

● The news follows reports that both Cincom and Honeywell have shown interest in Pobil, an end-user oriented language also developed in Melbourne, Australia (Software File, May 25).

Interactive Cobol

AN INTERACTIVE version of Cobol has been announced by Ventek for use on its Datapoint computer systems. Compatible with any system with at least 48K bytes of memory, the language includes features for screen formatting and operator prompting, as well as facilities to accept, reformat, edit, and process online data input.

subsequently be widely published. It is possible, therefore, that the compiler will eventually enter the public domain, as is the plan for the Ironman real time language, also an ARPA project.

According to an I. P. Sharp spokesman, the first implementation will be for Digital Equipment's PDP-11 range, models 34 and above. It will run under the UNIX operating system developed by Bell Laboratories.

The language will be suitable for constructing complete operating systems, it is understood, as well as for writing "unbreakable" security modules or kernels to prevent unauthorised access to data.

An interesting aspect of the project is that many of the requirements established for Euclid also form part of the Ironman requirements.

Experience gained in the implementation of Euclid, which has already been under way for about a year, could therefore contain important lessons for the two remaining Ironman contractors.

One significant area is that of aliasing, which both languages are anxious to prohibit. According to Dr Brian Wichman, of the UK National Physical Laboratory, the Euclid team has already shown in some major cases that aliasing can indeed be trapped.

● Euclid should not be confused with two existing graphics software packages, which already share the name. These are the system developed by Davy Computing, of Sheffield, and a French-developed package offered in the UK by SEL (CW, November 17, 1977).

Using Telex terminals as a link to a network

THE widespread availability of Telex terminals must have prompted many to consider their use as a link to a computer network, particularly where a company is reluctant to hire or buy a terminal solely for DP activity.

In addition to being commonly in use already by many multi-centre offices, Telex facilities have the further advantage that Telex lines to Europe and elsewhere are in general more reliable than telephone lines for data transmission.

The relatively slow speed of the Telex system, viz 15 cps, limits its use in receiving and printing lengthy outputs. However, the system can be adapted fairly easily for submitting queries input data to an application system and receiving short results.

In the input role, the best tactic is to prepare paper tape input offline and feed it through the reader once the terminal has been connected to its destination. With a machine such as the Telexprinter 16 Auto, this method is cost-effective and also helps to minimise the error rate.

However there are signs. One problem is that the input is not under the control of the receiving computer — the Telex terminal acts rather like an intermediary who never stops typing. Also buffer sizes are small, so that data can be lost if

much processing is performed on each input record.

In addition, end-of-record can be a problem as it is indicated by a pair of characters — carriage return and line feed — rather than by a single code.

Many common Edit Build file type commands will accept either characters as a record terminator, but having taken carriage return as end-of-record, line feed will be interpreted as a null record and, therefore, end-of-file.

So the input program itself must handle null records, which is virtually impossible with a Build-type command system. A special terminator is also required for end-of-file.

After end-of-file, it is normal to allow a few inches of blank tape to feed through. However, the Telex character set does not include a null character — corresponding to no holes punched — so a wait command should be included, say for five seconds, to allow the tape to end.

This is because, until the tape has ended, it is not possible to return a message reporting that the data has been accepted, or to return an exception report. Adds On-Line at Escom, has been using Telex in this role for many years and has found APL an ideal language for writing a Telex input program, including routines to translate the Telex character set.

Details of Univac production control pack

WITH the formal launch of the package in the UK, more information has become available on the manufacturing control system developed by Univac for the BCS small business computer (CW April 6).

Designed for small and medium sized manufacturing businesses with turnovers between £500,000 and £7 million, the production management package is intended to be set up and run by production management staff themselves.

The system, designed for predominantly batch-orientated manufacturing, consists of three main modules: bill of material and inventory control; scheduled receipts; and materials requirement planning.

The Bomp sub-system, based

on a parts master file and product structure file, provides a range of explosion facilities, yielding such information as component use quantities either directly or as an input to other modules, for example requirements planning.

The latter function handles a time-phased production plan of end-products, over up to sixty forward periods. By comparing predicted component requirements with stock on order information, net requirements can be identified, off-set by supplier and manufacturing lead times.

A complete hardware/software system, requiring no specialist or computer staff to operate it, can be rented from about £500 per month, notes the company.

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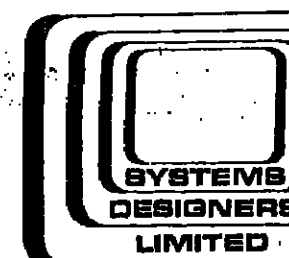
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OP SPOT

Realistic career paths for operations staff

FOR the typical operations person, the trip up the promotional ladder is swift but soon ended; he climbs quickly to the level of senior operator but finds further progress very hard going.

This is a sad and wasteful state of affairs. It is frustrating for the staff and detrimental to both the companies concerned and the computing industry as a whole.

To rectify the situation, and so make use of the vast wealth of ability and experience that exists within operations, we need a change in the attitude of companies, a greater awareness from operations managers, and a broader definition of the term "operations". In a nutshell, we must have realistic career paths for operations staff.

The first step is conceptual in nature. The computer industry

management potential of operations staff. Remember that on the evening and night shifts, the role of the person in charge is primarily that of decision-maker, often under pressure.

Taking these factors into account, a realistic career path would lead either into technical support roles, including troubleshooting, or positions which call mainly for supervisory ability. In the latter case the progression might well mean moving out of the computing department.

Add to all this the fact that more and more sites are implementing TP networks of one sort or another, and we have another direction in which operations staff may progress. In fact a move into TP would prove to be very interesting. It calls for a thorough understanding of the workings of the system, and provides the opportunity to visit the sites of the users.

If operations staff wish to move into programming or systems analysis they should be given the opportunity to do so. A good method is to move the operator to the department concerned for a trial period of a month or two. If he is happy there, and the department is satisfied he has the ability for the work, the transfer should be made permanent.

Of course, the part played by the operations manager is of great significance. He must take an interest in his staff, and take the trouble to find out what their abilities are and where their interests lie.

He must carry out staff appraisals every three months or so.

Taking the operator's abilities and interests into account, the computing courses he will be sent on should be worked out. It is important for him to attend the courses at the right time if they are to be instrumental in shaping his career.

Fortunately, some companies are aware of the importance of the talent that exists within their operations team. At BOC Datasolve, for instance, the progress of staff is monitored closely with a view to placing staff in positions for which they are suitable.

John Robbins, who is Datacentre manager at Data-

Operators often complain that nobody listens to their point of view. Well, Op Spot is listening, and Bernard Allen would like to hear your opinions and ideas on all matters relating to computer operations.

Your letters should be sent to Op Spot, Computer Weekly, Poynt House, Bishopsgate, London EC2A 4PU. Telephone calls are equally welcome and Bernard can be contacted on 0700 700 700.

Fully endorsing Stevenson's views, I would add that management must also be made aware of the supervisory and

solve's site in Oxford Circus, told me: "We view operations as a sort of starting point. We keep an eye on the staff to see what attributes they have."

But operations staff must take the initiative themselves. Speaking at the aforementioned DPMA meeting, Jack French, operations manager at the Bishopsgate site of the Bank of Belgium, said:

"Many operators are not sufficiently interested to become involved in technical matters. Too many are just interested in getting home early."

Before French's staff set about lynching him, I must point out that he went on to say that those with the right attitude and motivation should be encouraged and helped to move into technical roles.

The point about attitude is of great significance. Let's be clear about what I consider to be the "right attitude" from operations staff. It is all about investigating technical matters at a level slightly deeper than is considered the norm. It also concerns taking the trouble to ask questions and reading technical manuals which are often quite difficult to understand.

I emphasise this point because it is the one which some opera-

tions managers and the majority of DP managers always seem to miss. To them the "right attitude" means scurrying about the computer room and looking busy. To please them, there is no need for technical expertise or appreciation of the system. Just look busy and they will rate you as a good operator.

Finally, let's consider career progression in relation to shift allowance.

Now for a person to come off shift work he must be willing to forfeit his allowance and, if he has been with the company concerned for a considerable time, that might be a reasonable, if not princely, sum.

Some argue that to overcome this problem, operations staff should be encouraged to live off their basic wage and save the allowance. They say that this will prepare the operators for the time when they have to sacrifice the extra money in order to further their careers.

I believe we need a complete rethink about the shift allowance, because at the moment too many companies and staff associations seem to think of it as a perk for operations staff. The role played by operations staff should be reflected in their basic wage.

I emphasise this point because it is the one which some opera-

By Bernard Allen

HINT OF THE WEEK

Successful jobs should be displayed, too

THIS week's hint relates to George 2 macro messages, and is from Ron Linton, who is computer operations controller at Manchester Polytechnic and a regular contributor to Op Spot.

According to Linton, in the event of a production job failing the operator will have to contact someone in the programming department. He calls for standards to make the operator's life that bit easier.

"To make the failures obvious, it is worthwhile setting up a standard that every job, upon completion, should display to the operators a message of the form 'RUN-OK or RUN FAILED'."

Ron says that these messages should be written into each job description or macro, and explains why it is necessary to

notify the operator of the successful job as well as the failure. He says, "It is not sufficient to assume if there is no failure message that the job is OK, because it is possible for a faulty job description to simply 'drop off the end' and bypass a failure message."

"I have known the latter to happen, with the result that a failed job was assumed to be correct, and a subsequent job was tried to utilise the results of the first."

© I'm keen to hear your technical and non-technical hints, and offer £5 for each one that is published in Op Spot. Please state clearly your name and that of your company, giving a telephone number on which you may be contacted during the daytime.

Union calls for VDU health hazard research

CONCERNED for the health of its members, the National Union of Bank Employees has requested that Lloyds Bank carries out some research into the health hazards of operating VDUs and microfiche readers.

Areas defined by the union are the danger of radiation and the long-term effects on the operators' eyesight. The union has

also asked the bank to arrange regular eyesight check-ups for the operators of the units.

In response, members of the bank's medical staff and management are to attend a course on the effects of VDUs on eyesight to be held by the Institute of Ophthalmology in London (CW, February 23).

Edited by Martin Banks

MICRO NEWS

Hoskyns' hotel pack set for US launch

THE Hoskyns' Hotel System, which started its public existence six weeks ago with an order for a total of five systems for Holiday Inn hotels in this country, is to be sold on the US market through Hoskyns' parent company, Martin Marietta.

And although the company would not comment



Hoskyns' Hotel System is shown the MP Experiment by Mavel.

Minister sees ERA's MP...

ON a visit to the Leatherhead laboratories of ERA, a Department of Industry parliamentary under secretary, Leslie Huxford (Lab, Nuneaton), was shown the MP Experiment by one of its developers, Chris Naveali.

Despite its name, the MP Experiment has nothing to do with members of parliament but could be a useful aid to any computer layman wanting to acquire a basic appreciation of how microprocessors work and how to use them.

Built at Sturt, near Watlington, the MP Experiment is a Standard Electric 8080 and many of the microprocessors are provided for an experimen-

Finding way in exhibition made easy

FINDING one's way round large exhibitions is usually one of the more tedious ways of spending a day, and the US electronic components exhibition, Wescon, to be held in Los Angeles next month, is usually one of the larger shows.

To offer succour to the visitors to the show, and to gain just a little self-promotion as well, Warren Point will be using a version of its London Underground routefinder on its stand at the show, re-programmed to point the way round the exhibition.

Warren Point, which will be part of a large UK contingent of exhibitors at Wescon, have installed the Routefinder for London Transport at the new Heathrow Airport station at the end of the Piccadilly line.

It provides routing information for travellers on every station on the Underground network, from the starting point of the Airport station. The information is available in three languages.

South Korea link for AMI

US semiconductor manufacturer American Microsystems Inc. of Santa Ana, California, is planning a \$10 million equity-owned joint venture company in South Korea. AMI's partner is Seoul-based Gold Star Co., a manufacturer of domestic appliances and electronic entertainment systems.

The new company will be called Goldstar Microsystems Inc. AMI will design the integrated circuits for use in Gold Star's products. Production is planned to begin in mid-1979 and the company should provide jobs for 800 Koreans.

TUC to debate the impact of micros

By Robin Webster

CONCERN over issues raised by the impact of information technology, including employment, have been highlighted by resolutions tabled for the TUC Congress in September (CW, August 5).

The resolutions split the problem into two main areas: the need for the creation of a well-defined government policy towards information technology to allay trade union fears over unemployment; and the importance of setting up an indigenous microelectronics industry.

The Society of Civil and Public Servants, for example, has called for greater TUC pressure on the government to develop a viable employment strategy that matches the rapid incursion of information technology into industry.

"The SCPS has concluded that there can be no opting out of the microprocessor development field," said Campbell Christie, deputy general secretary of the SCPS. "We are going to have this industry and therefore we are going to be affected by the development of systems using microprocessors."

"We are most concerned with the social implications, however. For example, the Civil Service is already using word processing systems and these will have a fundamental effect on the employment of secretaries."

"The 'electronic office', with facilities such as electronic filing and electronic mail, is possible. The consequences for employment are horrendous."

The SCPS has proposed that steps be taken by the government to ensure that there are enough trained people to meet the manufacturing requirements of both hardware and software fields.

On setting up a UK microprocessor manufacturing capacity, Christie believes that it is imperative for the government to go beyond the National Enterprise Board's initiative in setting up Immos, its venture into semiconductor manufacturing, and that the TUC could play the role of catalyst.

"Something positive has to be done about the introduction of the microprocessor," he said. "It is not simply a further development of the computer. It is much more fundamental; it is as significant as the development

of the steam engine or electricity."

In a similar resolution, AJEW/Tass supports the SCPS view. "The prerequisite is a publicly-owned home electronics industry and the setting up of preferential procurement policies," said Ian Benson, a divisional officer for Tass, and chairman of the NEDO working party.

"With this we can then phase in new technologies. Now that we have a State-funded manufacturer in the NEB's Immos venture, if any US companies want to get into the UK as a market area, they should have to use Immos as a second source."

"Immos goes some of the way, but it should be built upon," he added.

Representing 125,000 Post Office maintenance engineers into supervisory levels, the Post Office Engineering Union cites the forthcoming introduction of the Post Office's System X, and its current TXE 4 installation as an example of the "industrial consequences" of new technology.

Commenting on the TXE 4 and System X worries, a spokesman for the POEU said: "There could be some major problems when the Post Office introduces these systems into the network and, while a lot of money is being spent on System X research, the human side of the situation seems to have been ignored."

"The Post Office has nobody who is concerned with the industrial relations problems that may arise from the implementation of such technology."

The Post Office, however, denied that this was so and said

that while there was no one person or department set up to deal with the problem, "positive assurances" had been given to the engineers on job security.

"We have guaranteed their jobs for five years ahead," said a PO spokesman, "and this agreement will be updated at yearly intervals."

Other resolutions on these topics have been tabled by the National Union of Bank Employees which urges the TUC General Council to produce a report on the "structural unemployment precipitated by these particular innovations (automation and computerisation)"; APEX, the Association of Professional, Executive, Clerical and Computer Staff which is seeking a one-hour reduction in the working week each year for the next 10 years until the 30-hour week has been attained; and the Union of Post Office Workers, which also calls for a shorter working week.



Speeding the ambulances

Computer-aided ambulance scheduling is being used by the South Yorkshire Metropolitan Ambulance Service in arranging over 2,000 ambulance journeys a day for the Doncaster, Barnsley, Rotherham and Sheffield areas. The £40,000 system, which features a Data General Nova 3 minicomputer and six ADDS Regent VDU's, supplied by Terminal Display Systems of Blackburn, provides schedulers with access to a constantly updated

file on hospital and patient information, and is expected to reduce the normal scheduling time.

Based at a purpose-built centre in Fairfield, near Sheffield, the system will also provide hospitals and clinics with a daily log giving advance warning of patients' arrival.

Our picture shows an ADDS Regent 100 VDU being used by a scheduler at the South Yorkshire Ambulance Service.

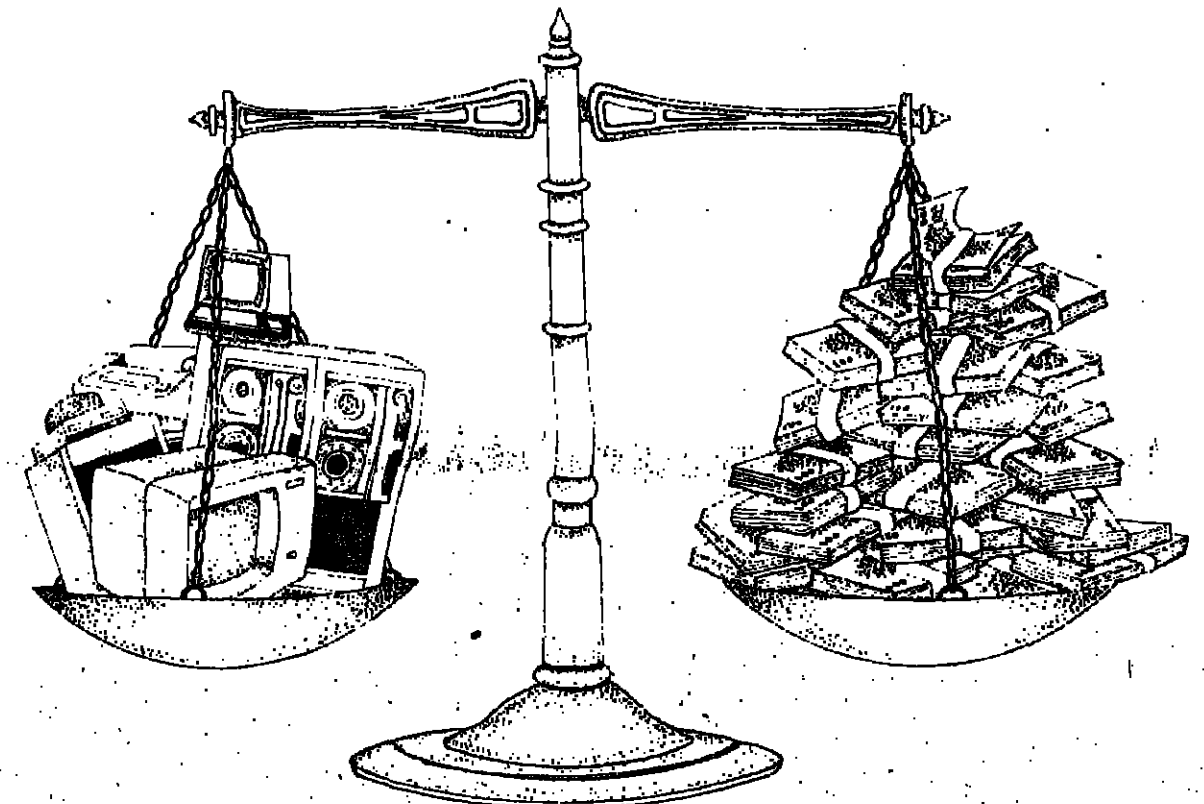
Japanese relax guidelines

AS forecast last year (CW, November 10, 1977), MITI, the Japanese Ministry of International Trade and Industry, is to relax its rigid guidelines for the national computer manufacturers.

MITI is responding to foreign criticism of its policies, but also accepts that its rigid direction of the industry has been only partially successful. It will now take a back seat.

A significant failure has been the "shot-gun marriage" between Fujitsu and Hitachi which was intended to force the two manufacturers into close collaboration but has in fact resulted in Fujitsu and Hitachi competing as fiercely with each other as with IBM.

The enforced marriage between NEC and Toshiba was marginally more successful, but came too late to save Toshiba, which has now thrown in its hand and ceded almost all its mainframe interests to NEC in return for an equity stake (CW, July 27).



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Complex

ANNE RHODE (Letters, July 27) disappointed me. Dealing himself as Complex he omitted to include a middle initial, surely that should be "I". Perhaps, as an electronic engineer, he can be forgiven as he probably uses the imaginary

KEVIN J. O'MEARA
Thurston Software Consultants
Sheffield Aerodrome

PEOPLE

Unilever Executive for data services

AN executive to control the data services division has been formed at Unilever Computer Services. It will be chaired by Len Rawle, who is chairman of the company.

Head of national marketing is Harold Bain; Ray Tee, who is head of Unilever marketing, and Fred Moyden, head of the computing division, are the other members of the executive.

Bain joined UCSL soon after its formation in 1970, from Plessey, and was appointed national sales manager in 1973.

A founder member of UCSL, Tee was the first account manager and became sales manager in 1973. Moyden is also a founder member, and was operations manager of the Unilever Research Laboratory before becoming head of the computing division.

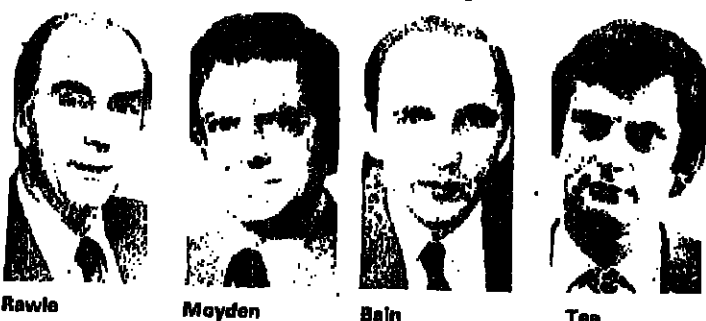
Appointed data services development co-ordinator with UCSL is Roger Tomlinson, previously in sales. He joined the company in 1970 from the University of Aston where he was a lecturer in Maths and Computing.

New address for IDPM

This week the Institute of Data Processing Management moved into its new central London headquarters at 12/13 Hande Street, WC2. The offices have no telephones because of the overtime ban and work to be done by Post Office engineers, and for the time being the institute may be contacted via the former IDPM offices at Maidenhead, tel 0628 29979.

Bob Horrobin, Mike Bramley, Tony Burgess, Gopal Bar and Jim Barnes are the directors of Pentagon Computer Services, a software house recently formed in Winsford, Cheshire. Horrobin was previously a senior project manager with Data-Skill; Bramley and Burgess were consultant programmers with Arc-Systems; Bar was a programmer with Data Logic; Barnes was a freelance consultant.

Alan Fagg, previously a district sales manager in the desk-top systems group at Hewlett-Packard, has joined Engineering Computer Services as sales director.



Rawle Moyden Bain Tee



Harry Secombe took the pictures at the wedding of his nephew Stan Secombe to Madeline Barance in Hanwell, Middlesex recently. Also in the picture is Stan's father Fred, who officiated at the ceremony. Stan is a programmer at the Metropolitan Police office at Putney.

Bill Bignell of Four-Phase Systems has been promoted from Southern region salesman to sales manager in the UK.

Andrew Ballam has joined A. B. Saunders, the data processing PR consultants, as a press and PR executive. She was previously press officer of Univac, and before that was a writer with Computer Weekly.

Bernard Smith, previously a salesman with Data Systems International, has moved to Logabax as a salesman in the North of England.

Michael Causer becomes engineering manager of Compeca Inc, the US subsidiary of Compeca. He was previously with Isopile Ltd. Raymond Kuah has been appointed technical representative, based in San Francisco. Formerly he was general manager of Apollo Technology Inc.

David Rhys-Davies has joined Jenson Computer Services as project leader for the implementation of a stock control system. He was previously a systems analyst at Green Shield. Programmer Bill Petheram becomes technical project leader for RSTS/E support and for AXCESS, RECON and MENTOR.

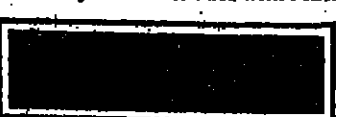
Promoted from systems analyst to project leaders are Dave Kearns and Andrew Brown. Kearns has responsibility for a stock control system for oil rig support, and Brown will cover a turnkey order entry/ledger system.

Trainee programmer Chris Mathews has been promoted to analyst/programmer, specialising in Jenson's accountants' packages, and Dave Nuttall, formerly a programmer with Rascal Redac, has joined Jenson, also as a programmer.



Brown Kearns

Robert Bevan has become director of North American sales with MSI in the US. He was previously a regional sales manager with the company. Aubrey Easterlin has become director of major account sales with MSI.



AUGUST 21-24
Operational data security workshop. Operational Data Security Corp. City University, London EC1. Register August 18: 01-263 4390, ext 347.

AUGUST 21-22
Cybernetics and systems fourth international congress. World Organisation of General Systems and Cybernetics. Amsterdam. Details Dr J. Rose, College of Technology, Blackburn, tel: 0254 84221.

Conference on parallel processing. IEEE Computer Society/Wayne State University, Ballaure, Michigan, USA.

Meeting, VM UK and Ireland Users' Group, Maidenhead. Details from Ian Bisset on 01-589 8111, ext 2700.

August 25
SIGGRAPH 78, fifth conference on computer graphics and interactive techniques. Association for Computing Machinery, Atlanta, Georgia, USA.

AUGUST 26-SEPTEMBER 1
Eighth Australian Computer Conference, Australian Computer Society, Canberra.

AUGUST 29
Jackson design technique, management (tutorial). Marcus Bromberg, Dept of Computer Science, University of Strathclyde, Glasgow, G8. Details from the Continuing Education Office at the University, tel: 041-552 4400, ext 2132.

September 4-8
Medical Informatics Europe congress, putting Cambridge.

September 11-12
Compucon Fall 78, IEEE Computer Society, Washington, DC.

September 17-18
NASA/Stanford University conference: NASA/Stanford University, Stanford, California.

September 19
Computer training for project control, seminar. Association for Project Control, Woking, Surrey, tel: 041-788 3182.

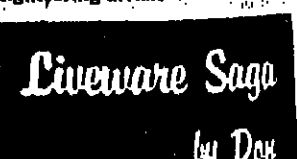
Helen Hackett has become personnel manager with Atkins On-Line. She will set up a personnel function following the company takeover from the Atkins Group by On-Line Systems. Previously she was in the personnel department for the Rapid Results College.

Two product marketing appointments at Atkins On-Line are those of Richard Arke, who was formerly sales and marketing with Rank Xerox, and John Clare, previously sales executive with ADP Network Services.



Clare Hackett

Rex Nelson has become a director of the Exchange Telegraph Company (Holdings). Rex's parent company, He is a director of the Exchange Telegraph Co, a subsidiary, and general manager of its engineering division.



Lineweave Saga by Don

REPORTS COMING IN ON THE COASTAL EARLY WARNING NETWORK...



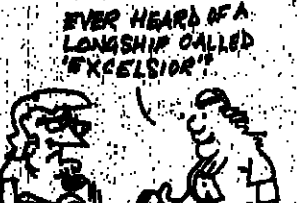
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EVER HEARD OF A LONGSHIP CALLED 'EXCELSION'?



THE two terminals, the first requests on the market to in-

NEWS IN BRIEF

Complaint withdrawn

THE shift controller, Mr David Finan, who was taking Northern Gas to the Industrial Tribunal on the grounds of unfair dismissal has withdrawn his complaint, for personal reasons. Mr Finan was sacked (CW, July 13) for printing biorhythm charts on the Northern Gas computer.

Stamp system

STAMP dealers Stanley Gibbons are using a 96K NCR 1-8250 computer with four VDUs and 20Mbytes of disc store to keep tabs on 50,000 stamps, coins, medals, maps and share certificates which move constantly between four shops, eight security centres, worldwide exhibitions and customers. The £57,000 system will also be used for routine accounting.

Turnkey contract

AUTOMATION for Whitbread's new Magor, Gwent, brewery will be provided by Logica under a turnkey contract worth over £250,000. The project is expected to take about nine months. The system is based on a Digital Equipment PDP 11/80, running under Logica's RPMC automation package, and also includes GEC Media data acquisition hardware and Ulbricht intelligent video terminals from West Germany.

Silence sohomes

SCHEMES for the leasing and hire purchase of business machine silence covers have been introduced by the Power Equipment Co of Kingsbury Road, London, NW8. The rates start at about £3 a month.

For Finland

THREE hospitals in Finland have acquired X-ray scanners from EMI: two head scanners and one whole-body machine. One head scanner is operating as part of the private health service at a Helsinki hospital, and the other two units are at the universities of Helsinki and Turku.

Basic tutor on Pet

A TUTORIAL program for Basic is available from Commodore for use on the Pet computer. Supplied on a cassette tape for just £9, "Basic Basic" is an interactive tutorial system intended to introduce beginners to Basic programming. It includes fifteen chapters, six sample programs, and "homework" assignments.

TI bubble memory terminal sales soon 'off the shelf'

BECAUSE of the heavy demand for the Texas Instruments bubble memory terminals, the 763 and 765, which were introduced last spring (CW, April 28, 1977), there has been considerable delay in meeting orders in the UK and supplying potential customers with machines for evaluation. In the US terminals have been available for some time for immediate delivery but in the UK no orders have yet been fulfilled.

Now, however, David Monk, UK marketing manager for the European Digital Systems Division, says supplies are coming in and he expects to be able to clear these outstanding orders over the next month or so. New customers are likely to have a four to eight week wait, but it is hoped that in about six weeks sales will be virtually off the shelf.

Monk says Texas has received some lucrative contracts worldwide for the terminals and that there is a large number of active prospects in the UK. Involving several hundred terminals.



Diana sets up software house in front room

COTTAGE industry computing is on the up and up. A Bradford housewife, Mrs Diana Mackay, has installed £2,000-worth of microprocessor hardware in her front room, modified her television to make it into a display, and set herself up as a software house. Her prospective customers are mainly small businesses needing mailing systems, stock control systems, and payroll packages.

Mrs Mackay's hardware is a SWTP micro system, which is based on the Motorola 6800 processor chip, together with a Midwest Scientific floppy disc drive. She writes all the applications software in Basic, using a disc operating system supplied by Midwest Scientific.

One of her first contracts was for a system to handle a mailing list of 35,000 names and addresses, together with customer data, producing labels on a Centronics printer. Another early product was an information retrieval system that could find any one of 1,000 records stored on the floppy disc within three seconds.

Diana Mackay is 34 and has a five-year-old son and a ten-month-old daughter. She took an MSc in computer science at Bradford University and has worked as a programmer and a systems analyst for various firms in South Africa and London. She has collected her firm Microsoft (not to be confused with CAP Microsoft Ltd) and feels there is an ample market for her wares.

She asserts that micro is so cheap now that people will not want to pay big consultancy prices for software. "I am confident that the business will come," she says. Her service, she continues, "will particularly benefit the smaller businessmen who cannot afford the outlay for a large computer but want things at his fingertips."

Paperback chafe

BRITAIN'S thirteen leading paperback publishers have joined together to sponsor a computer-based system for keeping track of paperbacks in print.

The Paperback Stock Control System, to be developed and operated by the Gordon & Gotch Computer Group, will supply bookellers with a master card file describing all current titles. It will be updated monthly with additional cards for new titles and a printed report detailing changes to existing titles.

Monk says Texas has received some lucrative contracts worldwide for the terminals and that there is a large number of active prospects in the UK. Involving several hundred terminals.

NPL prepares new network plans

By Tim Palmer

WITH its pioneering internal packet-switched network fully loaded, the National Physical Laboratory in Teddington, Middlesex, is considering collaboration with outside organisations to create a new system, possibly based on the International X25 packet-switching standard.

The present NPL network was designed and developed in-house, and made significant contributions to the basic technology of packet-switching. The NPL is considering whether to develop the new one independently, or in collaboration with someone in industry.

Possible collaborators would include Logica, which has experience in packet-switching, GEC Computers, which has shown a growing interest in networking as the Post Office's Experimental Packet Switched Network EPSS has progressed, Ferranti, whose Argus 700 computers are used in EPSS, and

Plessey, which has had considerable networking experience, much of it on Digital Equipment minicomputers.

The present NPL network is perhaps best known for the Scrapbook information retrieval system to which it provides access throughout the laboratory. This was developed by NPL on a CTL Modular One minicomputer, and the software is now marketed by Triad Computing Systems, and has been sold to the EEC Commission, where it is running on a Siemens 7.738 mainframe (CW, March 3, 1977).

The NPL network is controlled

by a Honeywell 518 minicomputer with a second on standby, and currently has 30 different machines on it, including almost every model of the Digital Equipment PDP-11 range except the largest.

As well as Scrapbook, the network is extensively used for the NPL-developed Edit Interactive service for laying out text.

A facility has been developed to enable broadcast Teletext services to be displayed on a computer terminal, and the network has been used in several pioneering experiments on interconnection of packet networks.

Amdahl 470V/7 for Canada

THE first order announced outside the US for an Amdahl 470V/7 supercomputer has come from the Canadian government, which will pay \$4.8 million for the machine. The V/7 is significantly more powerful than IBM's top-of-the-line 3033, and is to be installed in the taxation office of the Department of National Revenue and Excise in the Canadian capital of Ottawa. The first V/7 built is on its way to Western Electric in Illinois, and another will be delivered to American Airlines in Oklahoma shortly (CW, August 3).

We're having a Ball!

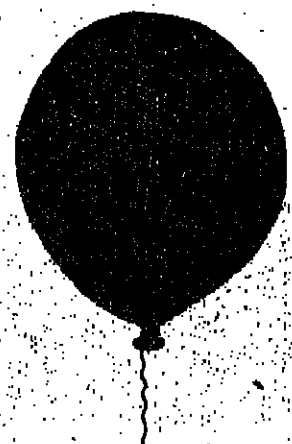
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Friday October 13 at the Royal Lancaster

Computer Weekly is holding its third annual Charity Ball. Last year more than 600 people attended what has come to be regarded as the computer industry's big night out.

This year the Ball will again be held under the patronage of the British Computer Society, on the eve of the Society's 21st Birthday.

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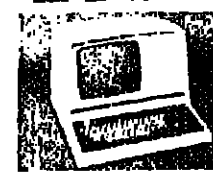
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Four-day seminar next month



Carl Machover, Bert Herzog, Derrick Grover and Keith Trickett will, with others, present the latest trends and achievements in graphics hardware, software and applications, in the US and the UK, at a four-day seminar staged by Online at the Regent Centre Hotel in London from September 12 to 15. Full details are available from Online, Cleveland Road, Uxbridge, Middlesex. Tel: (0895) 39262.

Here Sydney Paulden reports on the rapidly expanding market.

'Market explosion in graphics has begun'

"THE market explosion in computer graphics, that so many people had hoped for, has now definitely begun."

That is the firm conviction of Carl Machover, one of the leading graphics specialists in the US.

He backs his opinion with figures. "In the last 18 months the market has expanded so that most manufacturers in the field have had over 100 per cent growth in that time. I'm not talking about small companies just getting started. You would expect them to grow rapidly. No, I'm talking of companies that have pushed their graphics turnover from \$16 million to \$35 million. That is significant."

Machover is president of Machover Associates, a graphics consultancy, consulting editor of Computer Display Review and a former president of the Society for Information Display.

To clinch his argument, he points out that IBM has now come to the conclusion that the computer graphics market is big enough to demand its full attention. He points that within the past year IBM has taken on the marketing of CADAM, a system developed by Lockheed, and in October will be launching a new graphics display console, the 3280.

It is microprocessor technology that is revolutionising the view of graphics. Lower manufacturing costs, together with the hardware available for a much wider range of applications, demand is therefore increasing, and it is becoming more and more economic for production of graphics equipment in volume.

"Anyone planning new facilities or any manufacturer in the computer field thinking of new products must now consider the graphics field," claims Machover.

It used to require an investment of \$150,000 to get started in graphics in a scientific or engineering computing environment, but it can now be done for \$50,000.

Prices of some equipment are bringing graphics into the scope of the home-brew, do-it-yourself computing arena. One graphic tablet on the market permits the amateur to use a scribe to create any kind of design on his own

TV screen at home, in colour, for only \$1,000.

While such progress has been made in hardware, the graphics software experts have not been slack in the US. There have been important moves to rationalise software creation in order to make it more economical to apply packages on different types of equipment.

"The problem with software," explains Bert Herzog, "is that each person in the field has had to keep on reinventing the wheel. Now, we are getting to the point where graphics software will be much more machine-independent and pack-

By Sydney Paulden

ages will be that much more mobile and, consequently, cheaper."

Herzog is director of the University Computing Centre at the University of Colorado, where he is also Professor of Electrical Engineering and Professor of Computer Science. His up-to-date views on the graphics software scene comes from his appointment as co-chairman of the ACM SIGGRAPH Graphics Standards Planning Committee. The committee has produced a draft proposal for a draft standard.

"We are not a standards organisation, so we cannot draft standards," he says, "but we can make proposals to standards organisations. We have developed a technology for graphics programs that could result in huge savings in time and money. If these are accepted internationally, then programs could move easily within a country and across frontiers. Independent of the hardware."

Herzog has gained experience in implementing the standards proposals, and will shortly be in the UK to describe his results at the Online seminar.

The new generation of low-

cost graphics units will certainly stir the British market in the near future. According to Keith Trickett, managing director of Competa, the NRDC marketing support subsidiary, Britain can teach the Americans a thing or two in graphics software.

"Because of the shortage of cash for computer power," Trickett points out, "we British have had to use smaller computers more cleverly." He cites several examples of graphics packages with really viable commercial, engineering and scientific applications that have been developed in the UK and are in advance of anything comparable in the US. There is the interactive graphics system ICON, being used for the design of the lattice structure of oil rigs; Gaelic, a new system for integrated circuit design, devised by the Wolfson Microelectronics Liaison Unit at Edinburgh University; and a superb example of British software ingenuity is PDMS, the plant design management system.

Dr Keith Pike, one of Trickett's colleagues at Competa, says of PDMS that it is "much more than an automatic pencil for the design of pipeline layout." It allows the designer to construct 3-D representations of every component in a plant, down to the flange and gasket level. All the data is held in store, so that not only can the user access it from any angle, any direction and any level, but data can be collated and accessed for costing and for materials ordering. It is a valuable tool for storing data to be accessed years later, when the plant manager wants to introduce modifications to the layout, or wants to locate sets of components that have to be overhauled or replaced.

Derrick Grover, the NRDC executive with responsibility for licensing and funding graphics projects in the UK, is gathering together Trickett and Pike and others of the calibre of Professor W. S. Elliot of Imperial College to ensure that the graphics programs that are being developed are not overlooked when the American experts present their views at the Online seminar. He says: "It could be said that Grover is a case of the tail wagging the dog."

ICL shares climb after good reports

A SECOND stockbrokers' circular strongly recommends clients to buy ICL shares, following an extremely bullish report on the company from Laurie, Milbank (CW, July 27). This has helped to push ICL shares through the 360 pence mark and they now stand at their highest point since the company was formed 10 years ago.

A. R. Bowden of Fielding, Newson-Smith, who wrote the latest report on ICL, has been an en-

thusiastic champion of the company for several years, and he told Computer Weekly he believed the company still to be undervalued.

Gerald Kelly, of stockbrokers Rowe Rudd, has few qualms about the shares either. "There is a degree of interest among institutional investors—pension funds, insurance companies, unit trusts—in ICL as a long-term investment," he told Computer Weekly.

No more hitches in Euronet switch

THE problems which have delayed the opening of both the French Transpac and European Euronet packet-switched networks (CW, August 3) lay in the CP-50 switch, developed by Philips subsidiary TRT under sub-contract from SESA of Paris. SESA, the main contractor for Transpac, is building Euronet in partnership with Logica of London.

"The problem has now been solved," a Logica spokesman told Computer Weekly.

"It was the typical sort of problem that one gets at the systems integration stage. It occurred when the standby switch took over from the main switch, as would happen when the main switch failed. Instead of shutting down, the failing switch continued to generate data, which corrupted the data in the standby."

The CP-50 switch is built up of three modules, each based on the Intel 8010 single-board microcomputer which is driven by the 8080. The three units are the Group Unit, handling level 3 of the standard X25 interface; the Synchronous Line Unit, for HDLC users; and the Asynchronous Line Unit, which handles character terminals.

Several line units can be attached to each group unit, and several group units can be attached to the high speed ring bus through which a minicomputer, in the case of Transpac and Euronet a SEMS Mitra 125, monitors the packet exchange. This modular and flexible structure makes the CP-50 a particularly powerful device for

packet-switching, probably capable of catering for a greater variation of traffic demands than any other solution currently available.

However, the fact that the Telenet Processor switches, which are also microprocessor-based, can be bought off the shelf and are already installed and working in the US and in London, makes it likely that the Post Office will select these for its forthcoming X25 network if the plan to get it into service late next year goes ahead.

BETA, the Business Equipment Trade Association, has poured cold water on the Post Office's plans for a public packet-switched service. In a submission to the National Committee on Computer Networks, BETA suggests that a packet-switched service would benefit only a minor sector of network users, and calls instead for a basic circuit-switched network on to which packet-switching could be superimposed as a value-added service. BETA also wants moves towards an all-digital (System X) telephone network to be speeded up.

Speaking about Euronet in the Commons last week, Minister of State at the Department of Science, Gordon Oakes, said that the network would evolve to a pan-European public data transmission service. This has been envisaged as a likely development but not previously stated categorically. Traffic costs on Euronet will be less than £3 an hour.

The circular from Fielding, Newson-Smith is particularly complimentary about ICL management.

"All the evidence points to the fact that Dr Wilson has taken over the managing director's role very successfully, and more so than one might reasonably have expected given the suddenness of the changeover."

The company's potential is set out in a table which suggests that turnover for the year ending next month could reach £493 million, doubling to £81 million by 1982-83. Pre-tax profits should be about £37 million for the current year, and could reach £84 million by 1983.

Queen's Award applications

APPLICATIONS can now be made by companies wishing to be considered for Queen's Awards for Export and Technology 1978. Any UK based firm that feels it has made an outstanding contribution in either exporting or technology may apply.

Several firms in or close to the computer industry won Queen's Awards in 1978 (CW, April 21). Among these were Control Data, Plessey Telecommunications, and Marconi Avionics. British Rail won for export of computer consultancy services. There were 107 Export Awards in total, and 17 Technology Awards.

Closing date for this year's applications is October 31, 1978. Forms can be obtained from The Secretary, Queen's Award Office, Williams National House, 11/13 Holborn Viaduct, London EC1A 1EL; telephone 01-22 2277.

Something to celebrate at Pompey

WITH Pompey facing the bleak prospect of Fourth Division football in the new season, there is not much to cheer about down on Portsea Island these days. But one Portsmouth company doing a spot of justifiable celebration is Datacourse (Computer Services) Ltd.

This small systems house, which has been in business only since 1975, has won the title of best performing Honeywell systems house for the first time in 1978.

Datacourse beat five other companies to the award, the first of its kind, which covered the period January to June 1978.

"It is awarded on the basis of the number of systems sold in the period," a Datacourse spokesman said. "We won it this time by selling more systems during the period."

Datacourse has only been marketing systems based on the Honeywell Level 6 mini, but has offerings right across the power range of the machine, concentrating mainly on the £30 and £45,000 range. Although it is prepared to do turnkey systems, it is also entering two specialist markets: the building and solicitors' practices.

Datacourse started out by doing sub-contract programming work, but decided to enter the systems building market last year. Its first arrangement was with Cinnatrol Milnor, but after a couple of months, Cinnatrol pulled out of the business, and Datacourse signed up with Honeywell.

The award — half a dozen bottles of champagne and a citation — was presented at a gathering of Level 6 systems builders, and will be awarded next year.

Menzies introduces a new range of products

A CHANGE of name and a new product line features of a revitalised effort in the voice business for communications business for newspaper distributor John Menzies.

Previously called WDC Computers and responsible for marketing the Wavetek voice-response system, the subsidiary has been renamed Menzies Communications Systems Ltd, and is introducing a new range of products in the UK, which come from the company's new line of large computers, notably the Wavetek 1000, 1000S, 1000L and 1000M. The company is now owned by Pariphotics systems have been installed at 250 US sites.

Hobbyists in London form a club

A NEW hobby computer club is to hold its inaugural meeting in October with the backing of the Department of Electronic and Communications Engineering of the Polytechnic of North London.

Calling itself the North London Hobby Computer Club, it will open to all comers in the North London area. The opening meeting will be on October 2 at 6.30 pm in Room 47 in the City Building at Holloway Road, London N7 8AN.

One of the special prizes in the Dataskill/Computer Weekly essay competition, Computerstyle 2000, was awarded to Anthony Thornton, of Derby, who works for British Rail. His winning essay appears below. In it he describes the projected lifestyle of one Jo Bradley who, having reached the

age of 55, is to start a four-and-a-half day week, then four, three, ultimately retiring from economically active life at the age of 60.

The essay of the remaining special award winner, Paul Holden, of Dublin, will be published shortly.

'What would my Granny have made of all this.....'

computers waking me up, taking my orders for breakfast, supervising preparation of same.....?

By ANTHONY THORNTON

"BRRR... Silence. Brrr... Silence. Brrr..."

Jo Bradley opens his eyes, yawns and halts the sharp ring of the alarm with a spoken command. It is Monday morning, Monday April 23, Year 2000, time 8.00am, to be precise. Jo Bradley is reminded of these facts by the date/time display situated on the wall opposite. Turning to face the microphone by his bed head, he speaks deliberately.

"Break-fast-Em-Three."

"Accept," responds an anonymous monotone voice.

Jo turns back and smiles as he visualises the house computer directing the automatic handling device downstairs; the latter slowly traversing the racks in the kitchen until the pre-packed breakfast M3 is located, now transferring the aluminium container and retracing its path before gently placing the breakfast in the processor-controlled oven.

"What would my old granny have made of all this?" thought Jo.

"Computers waking me up, taking my orders for breakfast and supervising preparation of the same."

"You lucky creature!" he says aloud to his wife as he gets out of bed.

First in the bathroom, Jo decides to make use of his latest acquisition — a physical condition tester. He'd been pleased to add this capability to his house computer some weeks earlier. After all, he was in his 54th year and wasn't it a perk of his thriving business — selling, installing and maintaining personal computer systems — to reap the benefits of the latest hardware on the market?

"I'm not feeling quite 100%" he muses. Monday mornings never change.

Jo unhooked a speaker from the gleaming plastic cabinet. "Jo-seft Brad-jee," he mouths, in the same tones he had used when ordering breakfast. A stored message flashed across the now illuminated visual display unit, prompting Jo to provide hair, blood, urine, and exhaled air samples to the appropriate receptacle. Some minutes pass, while the results of analysis are digitised and communicated along with Jo's temperature, weight, blood pressure and pulse rate to his personal computerised medical record. One day, perhaps sooner, perhaps later, this information

would be made available to the master NHS files. On this morning though, the system merely responds by displaying a mass of numbers, representing the results of Jo's current condition alongside weekly and monthly average scores. At the bottom of the screen, a message insists that Jo is not to consult his local hospital but is to swallow a vitamin B17 pill after breakfast.

Twenty seven minutes and 11 seconds after waking, Jo is just polishing off the remnants of breakfast M3, when he is joined by his wife Jan.

"Good morning, dear. Don't forget your pill" she teases, with a mischievous grin.

"Accept," responds an anonymous monotone voice.

Jo notices the print-out, which his wife is perusing. "You shouldn't be reading my diary," he scolds, regretting the moment of passion when he had divulged the password which granted access to his personal information. One day, he swore, he'd switch over to the finger-print matching security system, like that fitted to the doors of the house.

Bending over his wife's shoulder, he scans his day's appointments. Just two straightforward installation jobs, left over from the weekend. Being Monday, there would be many more in addition to these on the files at his shop. Everyone, in theory, could send business messages direct to his home, but Jo would only allow this facility to special friends. He insisted on separating work and leisure. For Jo, home was leisure.

"Can you send 'sis' a birthday page?" Jo asks, noticing the relevant entry on the print-out. "One of those you made yourself."

With a fond farewell, Jo departs, leaving Jan to scan her small selection of greetings pages. Soon she halts the VDU

on a display of English flora, quite appropriate for Jo's American sister. A swiftly composed message, and a matter of seconds would elapse, before the page would reside in the files of electronic mail 3,000 miles away, waiting to remind "sis" of the march of time.

On her second cup of coffee now, Jan calls up her favourite "visual newspaper." A dull set of headlines:

Politics — Results of your vote on last night's bill — p 101. Sport — Glenrothes clinch place in European Cup — p 274. Crime — Decrease in robbery, increase in fraud continue — p 382.

She moves the display down the hierarchy of pages to the Timesview crossword. Today's winner — Lt Col Bird (retired) of Worthing in 7 min 41 sec.

"Some folks are setting a cracking pace this morning!" thinks Jan, "best get started about the house... Andy!"

The small robot skulking in the corner of the kitchen near the electric socket, stops whatever it is doing and follows Jan into the lounge. Together they set about a variety of domestic chores — cleaning, bed making, washing, pressing and the like. Many younger women specified the day's tasks to Andy-like robots and left them to it. Jan had always found this process time consuming and preferred a co-operative effort. Besides, with an untidy husband like hers, Jan had found Andy's early attempts to discriminate refuse from valued articles quite disastrous.

Chores complete, Jan has the rest of the day to herself.

What to do? Blemishy stock of food. No warnings from the house computer, leave it until later in the week. Spray weed killer on the lawn. Andy can do that. Reset the decor on the lounge wall. I quite like our present lighting pattern. Design some more dresses. Manipulating the light pen gets so tiring. Play "scrabble" with the computer. Not today thank you. Visit Mary.

Join the meantime is enjoying his drive to work. Having previously keyed his destination, his shop, into the car's trans-

mission system of submerged transponders is regulating and routing his journey-to-work through the city streets. He has time to reflect. Another year or so before he and Jan would enter a new phase of their lives — perhaps the greatest social benefit of all those attributable to the "era of high technology." At the age of 55, he will begin spending less time at work, at first a four-and-a-half day week, then four, three, ultimately retiring from economically active life at the age of 60.

Concurrent with this run down at work will be a phasing in process of education as preparation for active leisure. Education — much of it acquired through the home computer terminal; in travel not transport, in art not accountancy, in crafts not chemistry, in music not mathematics. In recreation not rheology, for doing not doing.

"Yes" thought Jo, "Gran did miss out on some things."

The shop is a large and roomy property near the city centre. Jo believed it had seen service as a supermarket in the past, but now it is alive with working demonstrations of computers and associated equipment, which Jo sold to the general public. Nodding to his counter staff in passing, Jo picks up the print-out detailing the day's installation and maintenance requirements. Selecting the two tasks he had seen earlier, he delegates the remaining dozen or so to his partners.

"Starting your active leisure early," quips one.

Jo grins somewhat self-consciously.

It is the middle of the afternoon before Jo is nearing completion of the second installation of the day — a microprocessor control system for his friends' greenhouse. Testing the system is somewhat amusing. Windows opening and closing as Jo shields the sunlight from first one sen-

sing mechanism then another; water spraying as he wipes moisture from a third, hot air waiting past as the temperature falls; acidity on a further sensor triggers an alkaline drip; on another, an acidic one. He checks the graphic monitor, seeing that the parameters defining each plant's environment, disrupted by his actions, have been automatically restored to their preset control values. All seems well. Too late to return to work now.

Jan is a little surprised to see Jo home early.

"What did you do today?" she asks.

"I walked to Mary's," and back, Jan looks pleased with herself, her normally pallid complexion showing the welcome benefits of fresh air and exercise.

"Oh very busy dear," responds Jo, in a sardonic tone, "that's why I'm back early."

They settle to a light tea in front of TV in the lounge. One of those electronic mail-order sales programmes, which are so popular nowadays, is in progress. Jan is beginning to show interest in the clothes being modelled, and so is Jo, when a message, via telephone line and home computer terminal, appears on the lower part of the screen. Only messages from sources to whom Jo has assigned priority will effect such an interruption.

Squash court available, 7.30 pm. "Shall we take it dear?" Jo asks.

"Better make it 7.45," says Jan.

Nudge nudge, wink wink!

"Provided we have dinner at the club, afterwards," came the bargaining reply. Jo does not need second bidding where squash is concerned. He is through to the club's reservation system in a matter of seconds, just pre-empting his friend with the greenhouse, although he does not know it. Court and dinner table reserved.

Many younger women specified the day's tasks to Andy-like robots and left them to it. Jan had always found this process time consuming and preferred a co-operative effort.

the Bradleys turn their attention to the menu in front of them. It does not take long to make their choice and transmit it to the restaurant. They often dine out these days, finding it both cheap and efficient compared to some years previously.

They prepare to follow hard on the heels of this last message. It is Tuesday morning, Tuesday, April 24, year 2000, time 9.01 am, when two tired but contented souls climb into bed. Jo turns to the microphone by his bed alarm.

"Alarm, eight am," he commands, drowsily.

"Better make it 7.45," says Jan.

Nudge nudge, wink wink!

Mascot as standards?

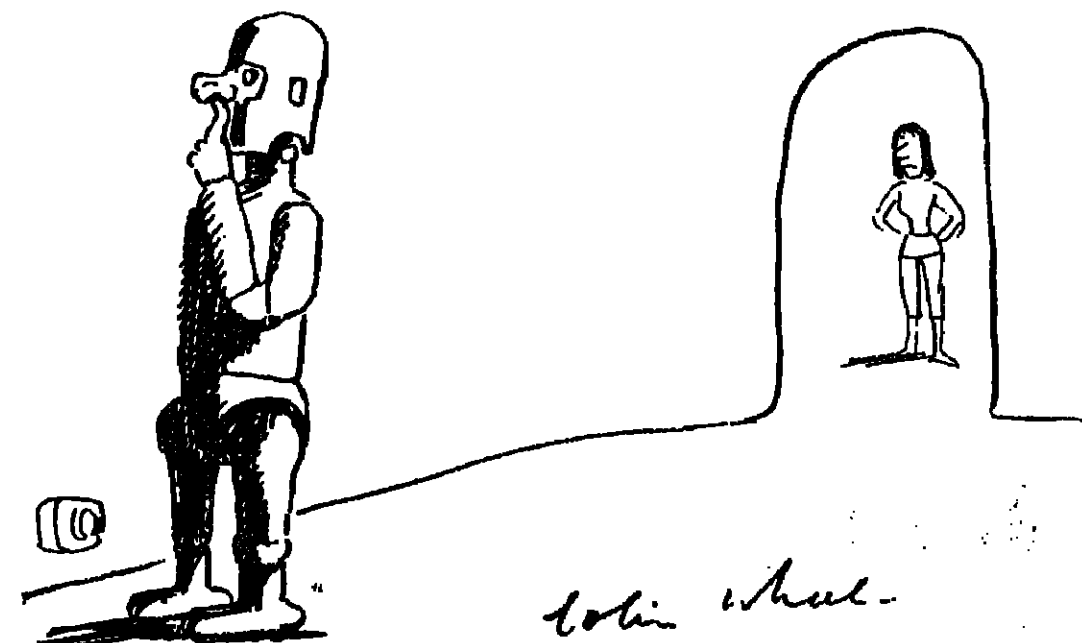
From front page obliged to adopt it. A consultative document describing the new proposal is due to be published in a few weeks, according to informed sources.

Mascot (Modular Approach to Software Construction Operation and Test) was originally developed as an aid to applications development based on an Algol 68 environment. It was subsequently adapted to suit the UK standard for real time work, Coral 68, with the assistance of Systems Designers (CW, November 17, 1977).

The system currently includes a real time executive, a development methodology, and optional extensions to the official Coral 68 standard. Highly regarded by those who have used it, it is said to offer major advantages throughout the software design,

implementation, and maintenance cycle. The Mascot Suppliers Association, an informal grouping of those interested in or experienced with the system, already includes Systems Designers, Software Sciences, Secon, and Logica on the software side, and Ferranti and Marconi as hardware suppliers.

An indication that more widespread use of the system is anticipated was provided by a lunch given in London last week by Infotech International, intended to launch a two-day Infotech tutorial on Mascot scheduled for October, the meeting was attended by senior representatives from the Mascot Suppliers Association and from existing and potential users, including the British Aerospace Corporation and GEC Computers.



The small robot skulking in the corner of the kitchen stops whatever it is doing.

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Ideally, the successful applicant will have proven supervisory ability, with a minimum of two years' IBM operating experience, preferably using DOS or DOS/VS and/or GRASP (VS).

For more information ring John Broughton on 01-736 8184 or write to him at:

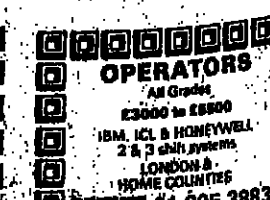
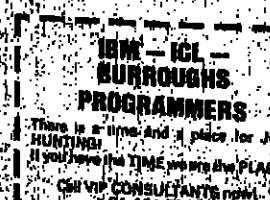
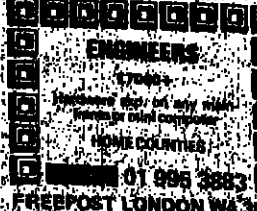
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Ref. E1/1008

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County Treasurer's Department
Computer Division

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It is expected that the applicants will have a relevant University Degree together with at least one year's post graduate experience in an ICL 1900 GEORGE 3 installation and have a working knowledge of COBOL, FORTRAN and PLAN.

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Requests for application forms stating post number to County Treasurer (Ref. RFB), Suffolk County Council, Milner House, Repe Walk, Ipswich. Closing date for completed application forms 31st August, 1978.

Suffolk County Council

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If you are unable to come along then please write to the Personnel Office, F International Limited, The Berry, Church Street, Chesham, Buckinghamshire HP8 1LB (Tel: Chesham (02408) 4999) for detailed literature.



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The programmer appointed will join a team providing the Institute with high level programming support for a variety of problems associated with physiological and psychological research. Programs are usually written in FORTRAN. Training in more advanced techniques can be given. Candidates should have a Degree (HND/HNC in an appropriate discipline and should be conversant with operating system principles. Appointment as Higher Scientific Officer (£14,100-£15,450) or Scientific Officer (£8,400-£11,410) according to qualifications and experience. Promotion prospects. Non-contributory pension scheme. For further details and application form (to be returned by 25 August 1978) write to Ministry of Defence, CM(S)103, Room 310, Savoy Hill House, Savoy Hill, Strand, London, WC2R 0BX. Please quote ref: SA/26/EM.

For further details and application form (to be returned by 25 August 1978) write to Ministry of Defence, CM(S)103, Room 310, Savoy Hill House, Savoy Hill, Strand, London, WC2R 0BX. Please quote ref: SA/26/EM.

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ANALYST PROGRAMMER
AP5-S01 (£4,461-£5,288, plus £312 supplement)

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The Council operates an IBM 370/148 under DOS/VS. A variety of financial and non-financial applications are processed currently and a new database system and extension of tele-processing is planned.

Application forms and further information from: The Borough Treasurer, P.O. Box 10, Warburton House, 25/27 Watney Road, Sale, Manchester M33 1AL. (Tel. 01-566 6161, ext. 243). Closing date 28th August.

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ANALYST PROGRAMMER

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SYSTEMS PROGRAMMER
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Haringey's Comprehensive Housing Service is looking for a person who has computer systems development experience and who would like to put this experience to use in an effort to improve the operating efficiency and information systems of the Housing Service for the benefit of the public.

An enthusiastic, self-motivated man or woman is therefore required who can ensure that new or existing computer based systems are fully developed and utilised.

This is a new post which is based at the Housing Service to ensure that computer systems development experience and who would like to put this experience to use in an effort to improve the operating efficiency and information systems of the Housing Service for the benefit of the public.

The successful applicant will be responsible for the development and maintenance of the computer systems of the Housing Service. The post holder will also be required to develop the use of a joint computer on line, computer network, L.I.L. which uses an IBM 370/148. The successful applicant will be required to develop the use of a joint computer on line, computer network, L.I.L. which uses an IBM 370/148. The successful applicant will be required to develop the use of a joint computer on line, computer network, L.I.L. which uses an IBM 370/148.

Application forms and job description from: Chief Administrative Officer, 13/27 Station Road, Wood Green, N. 22. Applications returnable by August 26th, 1978.

UNIVERSITY OF NOTTINGHAM
SYSTEMS ANALYST
SENIOR
PROGRAMMER

The University of Nottingham invites applications from suitably qualified experienced candidates to fill the vacancies that have arisen within the University's Administrative Data Processing Unit, at present based on site, 1901A.

SYSTEMS ANALYST
The person appointed to this post will report directly to the Data Processing Officer within the Unit, and will have the responsibility for the maintenance of the existing systems and development of new systems. The successful candidate will be required to develop the use of a joint computer on line, computer network, L.I.L. which uses an IBM 370/148. The successful applicant will be required to develop the use of a joint computer on line, computer network, L.I.L. which uses an IBM 370/148.

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Application forms and job description from: Chief Administrative Officer, 13/27 Station Road, Wood Green, N. 22. Applications returnable by August 26th, 1978.

SENIOR PROGRAMMER
A minimum of three years' programming experience with PL/I and/or COBOL is required, together with the ability to lead a small team of people working on a wide variety of projects mostly of a commercial nature. He or she will have the opportunity of working in the development and design of the University's computerised administrative systems.

The starting salary will be within the range £3,188-£5,282 and will be dependent upon qualifications and experience. Ref. 620.

Further details and terms of application, returnable not later than 31st August, 1978, from the Staff Appointments Office, University of Nottingham, University Park, Nottingham NG7 2RD.

SENIOR PROGRAMMER
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MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611

FORTRAN

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The arts give the world its pleasures, and science keeps the adrenalin flowing.

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Good Analysts and Programmers can choose their own location.

NORTHANTS to £7½K
Fortran & Assembler: minis & micros for development work & implementation.

SOUTH MIDDLESEX to £5K
(Mini). Fortran O.R. Programmer

LONDON - WEST END to £7K
Analyst/Programmer for vital environment

BUCKS to £5K
(ICL). Engineering background useful

LOUGHBOROUGH, POOLE, SURREY £Neg.
Mini or Mainframe

Contact Derek Pearson - action TODAY pays dividends TOMORROW

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

RPG II PEOPLE

SUCCEED!

No longer is RPG a playtime language for first time users.

No longer need you be confined to System 3.

Opportunities are here for ANALYSTS and PROGRAMMERS on a wide range of machines to use that RPG expertise. Software House, Manufacturer, small business or large business - you tell me and see it all happen.

BIRMINGHAM, LEEDS to £6K
Wide ranging developments including Comms.

SURREY to £6½K
Programmer Analysts. IBM useful

SUNBURY-ON-THAMES to £5K
General commercial

HAMPSHIRE to £9K
All levels - insurance very useful

HERTS, BUCKS, ESSEX to £5½K
Varied disciplines

Contact Derek Pearson - TODAY - for interview TOMORROW

MANAGEMENT & EXECUTIVE SELECTION

CONTRACT OPERATIONS STAFF

D.P. Support Services now require experienced Data Controllers, Operators, and Senior Operators for operations support, to assist us in fulfilling various user requirements on both short and long term contracts.

All types of machinery and operating systems are involved, as are excellent rates of pay and conditions for competent operations staff, willing to use their experience and ability to the full.

Why not contact me to discuss the range of opportunities available?

Telephone in absolute confidence
Steve Gregory.

D.P. SUPPORT LTD.,

KENT HOUSE, 87 REGENT STREET, LONDON W1R 7HF
TEL: 01-437 2062/3/4 (24-HOUR ANSWERPHONE)

dp

CITY TREASURER'S DEPARTMENT

The City Council have an IBM 370/138 on order and are planning a considerable expansion of both financial and non-financial services provided for departments. DL/I and CICS/VS will be used under DOS/VS.

Database

Administrator

Salary scale £6,342-£7,044

Must have a wide in-depth knowledge of computer systems and experience of project design for applications using a DBMS.

Systems

Analyst/Programmer (3)

Salary scale £5,232-£6,060

Must have participated in the design of at least one major system. Experience of CICS/VS or DL/I will be an advantage. These are the second tier level posts in established project teams.

Programmer (2)

Salary scale up to £5,073

Must have at least two years' experience preferably BAL or PL/I. A knowledge of CICS/VS or DL/I will be an advantage. Will join established project teams.

Senior

Computer

Operator

Salary scale £3,694-£4,118

(Includes 14% shift allowance)
Two shift systems in operation. Must have previous operating experience and a knowledge of DOS/VS will be preferred. The newly constructed Civic Offices include a staff restaurant. Flexible working hours. Removal and resettlement expenses up to £500 payable in appropriate cases.

Application forms are available from the City Treasurer, Civic Offices, Guildhall Square, Portsmouth PO1 2AR or telephone Cath O'Neill on 0705 834348. Closing date 7 September 1978.

city of
PORTSMOUTH

AUSTRALIA SYSTEMS ANALYST

We are the service company for the Australian banks' national credit card scheme - Bankcard.

Our Systems Manager is visiting Britain during the second half of September. He would be interested to meet Systems Analysts who are considering emigrating to Australia. (Our offices are in the Sydney area.)

If you have spent more than 5 years in EDP with some proven Systems Analysis experience with batch applications, please send a résumé to reach me by the end of August.

We operate twin IBM/370 equipment in both batch and real-time modes. Network applications are front-ended through PDP minis.

We shall negotiate attractive salaries and benefits for the right applicants.

Please send résumés to:

Allen Smith, Senior Systems Analyst
CHARGE CARD SERVICES LIMITED
P.O. Box 73
Auburn, N.S.W. 2144, Australia

ABERDEEN
ROBERT GORDON'S
INSTITUTE OF
TECHNOLOGY

SCHOOL OF ELECTRONIC AND ELECTRICAL ENGINEERING RESEARCH ASSISTANT

A Research Assistant is required to join an SRC supported Research Project concerned with the application of digital stochastic computing techniques in on-line control and simulation. Applicants should be honours graduates in Mathematics and Statistics or Computer Science or Electrical Engineering.

Three year fixed term contract.
Salary range £4,086, £4,311, £4,578 per annum.

Application forms are available from and should be returned as soon as possible to the:

Chief Administrative Officer
Robert Gordon's Institute of Technology
Schoolhill
ABERDEEN
AB9 1PR

UNIVERSITY OF NEWCASTLE UPON
TYNE
NORTHUMBRIAN UNIVERSITY
MULTIPLE ACCESS COMPUTER

SYSTEMS PROGRAMMER/ PROGRAMMING ADVISER

Applicants are invited from graduates in a team of programmers working with IBM 370/148 and 360/87 computers. Development of both standard IBM operating systems and the Michigan Terminal System is being undertaken. Opportunities exist to work on the interests of these systems or to implement and advise on applications packages. Applicants should have a good knowledge of IBM systems and an understanding of the needs of a community of research workers.

The appointment will be made on one of the following scales according to age, qualifications and experience: Range 1A £3,800-£4,175 or Range 1B £3,700-£4,000 per annum. Membership of the appropriate University superannuation scheme will be required.

Further particulars may be obtained from the Registrar, The



NORTH YORKSHIRE COUNTY COUNCIL

Requires computer personnel with the necessary experience and drive to join an energetic team of computer professionals engaged in developing applications for a large ICL 2976 computer providing comprehensive Batch, RJE, MAC and TP facilities for a variety of users under VME/R.

SYSTEMS ANALYST/PROGRAMMERS

Salary up to £5073

To be responsible as senior members of project teams for the investigation, design and implementation of systems.

Experience of COBOL and systems analysis will be advantageous with working knowledge of a sophisticated operating system desirable.

SYSTEMS PROGRAMMERS

Salary up to £5073

To supplement the existing software team in the implementation and maintenance of VME/R and associated superstructure.

Experience of a large operating system is essential, preference will be given to candidates with experience of VME/R or George 3.

PROGRAMMERS/TRAINEE PROGRAMMERS

Salary up to £3651

With experience of COBOL essential and a working knowledge of a large operating system desirable.

STARTING SALARIES WILL BE PAID ACCORDING TO EXPERIENCE

The Council's administrative headquarters in the market town of Northallerton is in the heart of the North Yorkshire countryside close to the North York Moors and Dales National Parks, York and Harrogate.

A large selection of attractive and reasonably priced properties are available within the town and surrounding villages. The Council will pay removal expenses, assistance with legal fees, disturbance allowance and lodging allowance where appropriate.

If you consider your experience and ability to be suitable, then write giving full details, together with the names of two referees to The County Treasurer, County Hall, Northallerton, North Yorkshire DL7 8AL. Tel: (0609) 3123 Ext. 616.

APPLICATIONS TO BE RECEIVED BY 31st AUGUST 1978

Have you the skill, the flair and the personality to manage our

Computer Operations?

We're not just looking for someone who can step into our Computer Operations and take over the job as it is, we're looking for someone with flair, imagination and the technical expertise to really make an impact.

Our installation comprises of our own In-House and terminal equipment running into an IBM 370/158 under MVS and as our Computer Operations Manager you will be responsible for the Data Control, Data Preparation and Operations Sections. We shall look to you to implement tighter procedures in these areas and will offer you a wide involvement to develop the effectiveness of the section.

You must already be working in a department where work is submitted to a manager and are probably a shift leader or manager looking for greater responsibility and freedom. Ideally you will have IBM/CL experience and will be currently earning in the region of £5,500 p.a.

As a rapidly expanding company which is already the largest independent supplier of Remote Batch Terminals, Data 100 offer you a stimulating and highly progressive working environment coupled with unrivalled career growth prospects. For further details please contact Mike Hall, Data 100 Ltd, Market Close, Harlow, Essex, Essex, Essex, Essex. Tel: 0279 2121. The Harlow Harlow 0279 2121.

DATA 100

THANET JOINT COMPUTER COMMITTEE

SYSTEMS ANALYST/PROGRAMMER

To work for a go-ahead local Organisation

APR/801 14,773-15,888 (inc. of supplement)

The Thanet Joint Computer Committee, who provide computing services with a Honeywell 62/40 for the Thanet and Dover District Councils, require a suitably experienced person to head one of the two-man analyst/programmer teams maintaining existing systems and developing sophisticated new systems. Consideration is being given to the use of on-line applications by both user authorities.

Applicants should preferably have a sound knowledge of systems analysis in local government and programming in COBOL.

Consideration will be given to housing accommodation and a generous disturbance allowance scheme is in operation.

Closing date: 26th August, 1978
Interview date: 30th September, 1978

Applications giving full details of experience to date to:

The Computer Manager, Thanet Computer Centre
Haine Road, Ramsgate, Kent CT11 5AA

THE LONDON HOSPITAL

SUPERVISOR OF COMPUTER SERVICES

Applications are invited for the above post from graduates and/or those holding an appropriate professional qualification.

The position will be in charge of the computer section which has a staff of 100 and is responsible for the day-to-day running of the computer system.

The post holder will be responsible for the day-to-day running of the computer system and for the supervision of the staff.

Applicants should have a minimum of 5 years' experience in a similar post and a degree in a relevant subject.

Closing date: 26th August, 1978
Interview date: 30th September, 1978

Applications giving full details of experience to date to:

The Computer Manager, Thanet Computer Centre
Haine Road, Ramsgate, Kent CT11 5AA

The Computer Manager, Thanet Computer Centre
Haine Road, Ramsgate, Kent CT11 5AA

data scene

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PROGRAMMERS
& ANALYSTS
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BOB EDWARDS
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Data scene Recruitment Limited
Scotney House
169-173 Regent Street
London W1R 7FB
01-439 1856
24-hour answer phone

Senior Systems Analyst Systems Analyst Programmer

Wyeth Laboratories have modern offices situated in attractive grounds at Taplow, Maidenhead, Berkshire and a Pharmaceutical Production Unit at Havant, Hampshire.

The Data Processing Department at Taplow is to provide a teleprocessing service to the Havant location in 1979 and the above appointments are to be made to develop and implement production control and accounting systems.

All applicants should have some programming experience and a knowledge of IBM DOS. The Programmer must be able to demonstrate a working knowledge of PL/I.

Applicants for the Senior Systems Analyst and Systems Analyst positions must have had at least three years commercial systems experience and applicants with teleprocessing experience will be preferred.

Please apply giving details of age, experience, and present salary to: Mrs. J. Andrews, Personnel Officer, Wyeth Laboratories, Huntercombe Lane South, Taplow, Maidenhead, Berks. Telephone: Slough 28311.

Wyeth Laboratories

BARRATTS

HAVE A VACANCY FOR A

PROGRAMMER

Applicants should preferably have a minimum of one year's COBOL or plan experience.

The current computer is a 48K/1801T with tapes and discs. The Division operates an ICL 1903T computer (shortly to be upgraded) operating under GEORGE 3 with a variety of terminals, including 1500, 7502 and 8059. The Division is currently preparing plans for its future hardware and software developments.

Excellent conditions of service apply including a contributory pension scheme, a flexible scheme based on a 35 hour, five-day week, plus generous sick leave and holiday entitlements. There is also a staff restaurant and an active Social Club.

Applications should be submitted on forms available from the Personnel Office, Thames Water, Thames Conveyance Division, Nugent House, Victoria Road, Reading RG1 5DB. (Tel. Reading 633331).

Closing date: 24th August, 1978

For an interview ring or write to:

Mr. B. H. Clouston, Personnel Manager
STYLIC BARRATT SHOES LTD.
Newbury Works, Kingsmead House,
Newbury, Berkshire. Telephone: 718500

SURREY

PROGRAMMER	1 year's RPG 11	To £6,500
SYSTEMS ANALYST	1 year's analysis & database	To £6,500
SYSTEMS ANALYST	Or RPG 11 prog to learn analysis	To £6,500
SYSTEMS ANALYST	2 years' financial systems	To £6,500
SOFTWARE PROGRAMMER	2 years' experience	To £6,500
SYSTEMS PROGRAMMER	18 months' IBM Assembler	To £6,500
PROGRAMMER	2 + years' Cobol	To £6,500
PROGRAMMER	Plan & Cobol	To £6,500
PROGRAMMER	Fortran/PL 1	To £6,500
SYSTEMS ANALYST	3 years' financial systems	To £6,500
PROGRAMMER	18 months' Cobol Honeywell 66	To £6,500
PROGRAMMER	2 years' low level language	To £6,500
SYSTEMS ANALYST	2 years' experience	To £6,500
PROGRAMMER	RPG 11 will train in Cobol	To £6,500
PROGRAMMERS	1 year's experience	To £6,500
PROGRAMMERS	18 months' experience	To £6,500
PROGRAMMERS	18 months' commercial ideally PL/1	To £6,500
PROGRAMMERS	1 year's experience	To £6,500

For further details and an application form please phone or call in.

AMES PERSONNEL
TELEPHONE: 01-767 0511

Sutton, Surrey

The Crown Agents operate as financial, professional and commercial agents for about a hundred foreign governments and many more overseas public authorities and international organisations.

The Computer Division is located at Sutton in Surrey and a Honeywell Level 66/05 has recently been delivered to replace the H.1250 and H.1015 already installed.

Systems Analyst Up to £6,250

There is an immediate vacancy for a Systems Analyst to join an established team working on advanced systems for the banking and investment departments using on-line and data base techniques. Qualifications required are at least five years' data processing experience including systems design and implementation. MH/721/CD

Analyst/Programmer Up to £5,400

An Analyst/Programmer is required to work on advanced data processing systems using Honeywell IDS and TDS software. Applicants should have at least three years' programming experience and a knowledge of Level 66 GCOS would be an advantage. MH/722/CD

For further details and application form please telephone Miss Horne (01) 222 7730 ext. 3382, or write, quoting the appropriate reference.

Crown Agents

The Crown Agents for Overseas Governments and Administrations, Recruitment Division,
4 Millbank, London SW1P 3JD.

Senior Programmer

Salary up to £4,962 per annum (including supplement), Ref. P.13.

Programmers

Salary up to £4,478 per annum (including supplement), Ref. P.6.

required in the computer section at Nugent House for the development of new and existing programmes in a range of financial and non-financial systems.

Applicants for the senior post should have a minimum of two years' COBOL and/or PLAN experience, preferably with an ICL 1900 operating under GEORGE 3.

Applicants for the Programmer posts should have a minimum of 18 months' similar experience. Appropriate training would be given to outstanding candidates for either post.

The Division operates an ICL 1903T computer (shortly to be upgraded) operating under GEORGE 3 with a variety of terminals, including 1500, 7502 and 8059. The Division is currently preparing plans for its future hardware and software developments.

Excellent conditions of service apply including a contributory pension scheme, a flexible scheme based on a 35 hour, five-day week, plus generous sick leave and holiday entitlements. There is also a staff restaurant and an active Social Club.

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Closing date: 24th August, 1978

For an interview ring or write to:

Mr. B. H. Clouston, Personnel Manager
STYLIC BARRATT SHOES LTD.
Newbury Works, Kingsmead House,
Newbury, Berkshire. Telephone: 718500

Thames Water

SET YOUR SIGHTS HIGH - REACH THE TOP!

★ Why not consider moving to a more rural area - relaxed country atmosphere

★ Take a step up the ladder - Learn new techniques - improve your prospects

★ Increase your salary - consider the perks!

IBM PROGRAMMER

LONDON

Our client, a prestige bank retaining large IBM hardware requires programme with at least 12 months' ASSEMBLER experience to join highly professional team. They are currently developing a major sophisticated on-line systems. Company offers: —

★ Excellent promotion prospects
★ Training in teleprocessing
★ First-class working conditions
★ Personal loan scheme and cheap mortgage
★ Salary £5,000

Ref. 1386

MINI PROGRAMMER

KENT

Our client is an international company based in a busy main town surrounded by beautiful countryside. They seek a programmer with 18 months' DEC PDP 11 and BASIC + experience. The hardware is newly installed, offering new development in both manufacturing and financial areas.

★ A challenging position with opportunities in a variety of areas.
★ Surrounded by picturesque scenery and where housing is very cheap.
★ Above average terms and conditions including 4½ day week.
★ Salary to £5,500.

Ref. 1696

PL/I PROG

LONDON

Due to expansion and to cater for future needs, this well-established D.P. services division retaining IBM 370 with extensive T.P. network, seeks PL/I programmers with minimum 2 years' exp. Company offers: —

★ Continuous development of both commercial and financial applications
★ Opportunity to learn CICS and Database techniques
★ Promotion prospects within a progressive organisation
★ Excellent perks including STL5, staff restaurant
★ Salary £8,000

Ref. 1479

SYSTEM ANALYST

LONDON

Our client, a prestigious Merchant Bankers, are seeking a Systems Analyst who has either financial or insurance experience. They retain IBM 370 under OS but will consider other hardware experience. Company offers: —

★ Full banking benefits including subsidised mortgage
★ Excellent working environment
★ Job security with prestige concern
★ Salary £7,500

Ref. 1594

JUNIOR PROGRAMMER

LONDON

Multi-national company retaining large IBM 370 hardware requires programme with at least 12 months' ASSEMBLER experience to join highly professional team. They are currently developing a major sophisticated on-line systems. Company offers: —

★ Highly progressive organisation
★ Continued development with a well planned schedule
★ Excellent benefits including cheap travel
★ Good promotional prospects
★ Salary to £6,000

Ref. 1290

ANALYST PROGRAMMER

S.E. LONDON

Our client, a major British insurance company in South-East London, seeks an analyst programmer with at least 12 months' analysis experience. They retain ICL 2980 using COBOL although they will consider people with any hardware experience. Ideal applicant will preferably have some insurance experience. Company offers: —

★ Excellent prospects for career path
★ Scope in a variety of areas
★ Good perks which include 2 Bonus a year
★ Salary £8,000

Ref. 1695

PROGRAMMER

SURREY

World leaders in their field, this organisation has an impressive varied range of business interests and is rapidly expanding. At their computer centre they have IBM 370, mini computers and additional new equipment scheduled, consequently needing programmers with minimum 18 months' COBOL, ASSEMBLER or RPG 11 exp. to work as part of project group. Company offers: —

★ Opportunity to go into analysis, with good scope
★ Fantastic working conditions, including large sports and social club
★ Paid overtime, flexi time, insurance cover
★ Subsidised staff restaurant
★ Salary to £6,800

Ref. 1872

SENIOR PROGRAMMER

CAMBRIDGESHIRE

Our client, a manufacturer of high precision instruments, situated in the beautiful rural surroundings of Cambridge, seeks a senior programmer to work on newly installed PDP 11 under RS/11 and BASIC +. Ideal applicant will have at least 2 years' experience of BASIC or BASIC +, company will consider other MINI hardware experience. Company offers: —

★ Variety of new development work
★ Flexi hours
★ Beautiful rural surroundings with reasonable house prices
★ Excellent perks, LV, discount on company goods
★ Salary £5,500

Ref. 1880

SENIOR PROGRAMMER

OXFORD

Our client is a major manufacturer of construction materials throughout the U.K. with turnover exceeding £200m. Running a modern computer centre and operating an ICL 1901T (upgrading shortly) they wish to appoint a Senior Programmer. Successful applicant will have a comprehensive COBOL experience with PLAN & FILETAB an asset.

★ Working on own initiative with minimum of supervision
★ Opportunity to work in small, friendly department
★ Relaxed picturesque surroundings not too far from the beautiful city of Oxford (Due to the location applicants should have own transport)
★ RELOCATION expenses will be negotiable
★ Salary to £5,500

Ref. 1878

ANALYST PROGRAMMER

WILTSHIRE

Our client, a major preservation society based in rural Wiltshire, have vacancies for analyst programmer with at least 18 months' RPG 11 experience. They are involved at present in taking over all major systems from their head office and have their development work planned for the next 5 years. Company offers: —

★ Variety of exciting new development work
★ Beautiful rural surroundings with very reasonable house prices
★ Generous RELOCATION assistance
★ Salary £5,000

Ref. 1837

ANALYST PROG

HERTS

One of the country's leading retail organisations seeks analyst programmers to work at team leader level on the development of new batch interactive and distributed systems. Company currently retain Burroughs B3700/4700 series hardware and are also investing in PDP11 equipment. They seek persons with 2 years' experience in design analysis and/or programming (any language) to make a career with them.

★ Universal opportunity to learn new languages and get on to MINI computers
★ Significant user contact
★ RELOCATION expenses
★ Salary to £6,160

Ref. 1656

PROGRAMMERS

MIDDIX

A major organisation in the retail trade is now pursuing further interests at a rapid rate. Retaining NCR Century equipment with new Criterion V 8580 scheduled for delivery at the end of the year, they seek programmers with 3 years' COBOL experience on any machine for their major stock control systems UTILISING TOTAL database.

★ Plan of new development work
★ Training in database
★ Sports and social club in beautiful grounds, heated swimming pool, squash club, etc.
★ Excellent perks, LV, discount on company goods
★ Salary to £6,250

Ref. 1658

CHIEF PROGRAMMER

LONDON

Our client, a major national retail organisation, seeks a chief programmer to take control of 15 programmers. Company retains IBM 370 to which a 3031 will be added shortly. Ideal applicant will have at least 5 years' programming experience in an IBM environment using ASSEMBLER, COBOL and PL/I. Job entails full management responsibilities and person will be expected to play a leading role in implementation for improved programming techniques.

★ Progressive organisation
★ Flexible hours
★ Full-scale projects
★ Excellent fringe benefits which include free lunch and discount on company products
★ Salary to £8,000

Ref. 1874

PROGRAMMER

MIDDIX

One of the most significant forces in the computer services industry in the U.K., our clients provide a comprehensive range of services to clients worldwide, retaining IBM 370. Company seek programmer with minimum 18 months' COBOL and/or PL/I experience.

★ Moves with programming into systems analysis of sales support to join one of their specialist groups
★ Chance to move on to MINI computers
★ Located within easy reach of London
★ Relocation expenses
★ Salary £5,500

Ref. 1451

IBM PROGRAMMERS

KENT

Our client, an international pharmaceutical company, seeks programmers to join their rapidly expanding DP dept. They retain IBM 370 and require people with minimum of 12 months' COBOL experience, preferably under OS. Company offers excellent opportunities for movement into systems analysis, design and software support. Company offers: —

★ Full training in TP and IMS Database
★ Flexi hours
★ Excellent facilities for career development
★ Social club, subsidised restaurant, pension and sick scheme
★ Salary to £5,500

Ref. 1819

PROGRAMMERS

ESSEX

Management services division of major British group with annual turnover of almost £100m seeks COBOL programmer with minimum 2 years' IBM or ICL COBOL within a project team. Programmers will become involved in program design, coding testing, documentation and maintenance as well as assistance in systems implementation. Company offers: —

★ Comprehensive range of applications
★ Opportunity to move to more advanced technical projects and a variety of languages and machines
★ Paid overtime — flexi hours — subsidised restaurant amongst many of the excellent perks
★ RELOCATION expenses
★ Salary to £5,500

Ref. 1824

For further details of the above positions and of the many others we have available in urban and rural areas — please ring our London office: 01-734 0152/3010.

CONTRACT DIVISION

OVERSEAS

MESSAGE SWITCHING
SURROUGHS GEMCOS
PDP FORTRAN
HONEYWELL 6000 G008 COBOL
PDP RSX11 LONG CONTRACT
NCR 6200 INOS COBOL
PROGRAMMER PL/I LONG CONTRACT
PROJECT LDR PL/I FRENCH SPEAKING
RPG II PROG ONLINE EXP
ICL 2960/70 IOMS

HOLLAND
BELGIUM
GERMANY
HOLLAND
PARIS
BELGIUM
2450 p.w.
2400 p.w.
2400 p.w.
2400 p.w.
2400 p.w.
2400 p.w.
2400 p.w.
2400 p.w.

ANALYST PROG INOS COBOL
PDP RSX11 FORTRAN
SNR ANALYST DATABASE DESIGN

COMPUTING AT CHRYSLER

Our modern Computer Centre at Whitley in Coventry serves the entire Chrysler Organisation in the United Kingdom.

Equipment includes a twelve channel 4 megabyte Amdahl System 470/V6 machine and a 2 megabyte IBM 370/155 CPU with an AMS PSU feature. Both CPUs are linked to a wide variety of peripheral equipment including new 6250 BPI tape drives.

Computer Operators

Applicants should have at least 18 months operating experience on IBM equipment preferably 370's. Three shift working is involved and overtime at weekends may be required, for which attractive premiums are paid.

Operations Analysts

Applicants should have at least 18 months operating experience in a large I.B.M. installation and a sound knowledge of IBM Utilities and JCL. Three shift working is

involved and overtime at weekends may be required, for which attractive premiums are paid.

Project Support Personnel

Education to degree standard or A level required. Applicants should have 3 years Data Processing experience. Sound knowledge of IBM operating system, Utilities and JCL essential. Knowledge of programming in COBOL or Assembler desirable.

Chrysler offers a high level of job satisfaction, good salaries and career prospects, and a pleasant working environment.

Fringe benefits include contributory pension scheme with free life assurance, generous holiday entitlement and employee discount on Company products.

Please contact Mrs. A.E. Jones, Recruitment and Management Development, Chrysler United Kingdom Limited, Whitley, Coventry, CV3 4GB. 0203 303505 Ext. 432.

Driving ahead in Europe



CHRYSLER UNITED KINGDOM LIMITED

DATA PROCESSING MANAGER

Up to £7,000 & car
Atherton

TI Bainbridge Silencers Ltd., is a member of the successful Tube Investments Group employing over 800 people and with a turnover exceeding £20m. It is the largest manufacturer and distributor of replacement vehicle exhausts in the UK with seventeen depots extending from Devon to Scotland.

This is an important and challenging new post in which the successful candidate, located near Bolton, will accept responsibility for developing existing systems and introducing new applications.

He/she will have three subordinate staff. The two major facets of the job will be the co-ordination of the internal system with the TI Central Computer Unit, and the introduction of mini-computers into the depot network.

Applicants should hold a relevant degree or equivalent qualification supported by sound basic DP experience and have had at least three years in the management of multi-site computer installations, preferably in the distribution business. Practical knowledge of control procedures and management information systems is essential.

Anyone under 30 years of age is unlikely to have the necessary experience to successfully undertake the duties of this post.

Conditions of employment are first class and include pension scheme, free life assurance and discount on all TI Group products.

For an informal discussion telephone 0204 71851 or please write with brief career details to:

E. Adamson, TI Bainbridge Silencers Ltd., Booth Road, Little Lever, Nr. Bolton, Lancs.

TI Bainbridge Silencers

A member of the Steel Tube Division

DEPARTMENT OF CHEMISTRY Research Assistant

to work on the solution of mathematical problems in chemical and enzyme kinetics. Applicants should possess an Honours degree in Mathematics, Chemistry or Physics. Experience in computer programming will be a considerable advantage. The person appointed will be expected to register for a higher degree.

Appointment is initially for a period of 2 years. Salary scale: £2,589 to £2,843 per annum. Application forms and further particulars from the Staff Officer, Portsmouth Polytechnic, Alexandra House, Museum Road, Portsmouth PO1 1QQ, to whom completed applications should be returned by 30th August, 1978. Please quote Ref. D86.

QUEEN MARY COLLEGE

University of London

COMPUTER ASSISTED TEACHING UNIT

Faculty of Engineering

Applications are invited for a 2-year appointment as MANAGER of the Unit. Candidates should be holders of a degree in Computer Science, Engineering or Science subjects with experience in programming and operating systems development, preferably in relation to interactive multi-media systems. High level language (e.g. FORTRAN and BASIC) skills are essential. The Unit is concerned with the development of computer assisted teaching systems and the development of computer assisted learning systems. Salary scale: £2,589 to £2,843 per annum. Applications should be sent to the Staff Officer, Portsmouth Polytechnic, Alexandra House, Museum Road, Portsmouth PO1 1QQ, to whom completed applications should be returned by 30th August, 1978. Please quote Ref. D86.

LEICESTER POLYTECHNIC SCHOOL OF ELECTRONIC & ELECTRICAL ENGINEERING

COMPUTER SYSTEMS ENGINEER

To supervise the day-to-day operation of a disk based Data General Nova Minicomputer. In addition, the engineer will be required to develop hardware and software for a variety of minicomputer and microprocessor systems. A degree in Electronic or Electrical Engineering or Computer Science is normally required for this post. Experience of computer hardware and software would be an advantage. Salary scale: £2,589 to £2,843 per annum. Applications should be sent to the Staff Officer, Portsmouth Polytechnic, Alexandra House, Museum Road, Portsmouth PO1 1QQ, to whom completed applications should be returned by 30th August, 1978. Please quote Ref. D86.

To £8K BASIC PROG. N. Harte
Generous company benefits are offered by very substantial international service organisation to BASIC programmers with solid commercial experience of two or more years on PDP 11 systems.

To £7K ASSEMBLER PROG. London
This is a London based appointment but initially the successful applicant will work, expenses paid, for some months in Scotland completing a project there. Two years experience and RSX 11 and MACRO 11 preferred.

£8K ANALYST/PROG. N. Harte
This vacancy involves liaison with users and other departments of a professional organisation. Looking for two years assembler (pref. PL/I), main experience (pref. DEC).

188 Finchley Road, London, NW3 6HP

HOLLAND SENIOR PROGRAMMERS £10,000

With experience in:
COBOL modular programming
DOS/VS
CICS
DL/1

Send your career details to:
The Personnel Officer
Hunter Douglas Ltd.
Walton-on-Thames

Hunter Douglas Ltd

Chief Programmer

Crawley, Sussex

A major international group seek an experienced person to fill this important computer vacancy at their Crawley Engineering Complex. The computer department supply a service to production, accounts, design and sales departments. DPC and Prime computers support 50 terminals in the offices and factory and in associated companies as well as Batch Processing services.

The successful applicant will supervise and schedule programming within the department and be responsible for establishing and supervising programming standards and discipline. It is essential that the job holder has a sound education to degree standard, followed by six to ten years experience of data processing, part of which should have been in a supervisory capacity.

An attractive salary and relocation package, if applicable, is being offered.

For further details of the job, salary, and company please contact:

David Chitoni
Senior Personnel Officer
APV Co. Ltd.
P.O. Box 4
Manor Royal, Crawley
Sussex
Telephone: 0293 27777

APV

PROGRAMMERS AND ANALYST

Circa £2,000 to £5,500 negotiable

We are an established software house in commercial applications and require the following staff to work on visible record and micro computers.

ANALYST — having one year's systems practice in addition to a sound programming background.

PROGRAMMER — having at least one year's programming experience.

JUNIOR PROGRAMMER — having up to one year's programming experience.

TRAINER PROGRAMMERS — having completed a university or technical college course in computer science.

Applications in writing stating full details of experience, employer, age and salary to:

Simdell Ltd.
Dale Buildings, Dock Street, Coventry
by telephone Coventry 61805



CONTRACTORS

Up to £250 p.w. with E.M.S.

ANALYSTS COMMERCIAL—NORTH-WEST
ANALYSTS BANKING—LONDON
IDS DESIGNERS—SURREY
PROGRAMMERS HONEYWELL L68—COBOL—ENTIRE U.K.
PROGRAMMERS HONEYWELL IDS—NORTH-WEST, MIDLANDS & SURREY
PROGRAMMERS—MINI SYSTEMS—SOUTH MIDLANDS
PROGRAMMERS—IBM CICS—MIDLANDS
PROGRAMMERS—FORTRAN—NORTH-WEST
PROGRAMMERS—IBM DOS/OS COBOL—LONDON
PROGRAMMERS—PL/1—LONDON AND SOUTH
PROGRAMMERS—ASSEMBLER—MIDLANDS
ANALYSTS AND PROGRAMMERS—LOCAL AUTHORITY EXPERIENCE—U.K.
PROGRAMMERS—COBOL BURROUGHS—SOUTHAMPTON
PROGRAMMERS—HONEYWELL COBOL—DURHAM
PROGRAMMERS—HONEYWELL COBOL—LONDON

NORTH WEST — ANALYSTS

Packages to £7,500 + O/T pay

The E.M.S. consulting group has a large quantity of vacancies for additional Analysts to handle expanding systems requirements in the North West region. Candidates should have a minimum of 2 years' systems experience and preferably although not essentially, past programming experience. Our major current requirements are for both Analysts and Senior Analysts to work on commercial systems development. Projects will include Ledger Systems, Stock Control, Warehousing and Distribution, Chain Store Systems, Database and Network Systems. Ability to work in conjunction with client team members and maintain a high professional standard will be important. Relocation assistance will be paid where appropriate. Telephone our Birmingham Data Centre urgently for early interviews on 021-454 7906 (Denis Filby/Dan Philp). Please complete the attached application form in addition and return to Newcastle, Stills, today. Over 20 current vacancies are available at very attractive salary levels.

ANALYSTS & PROGRAMMERS BIRMINGHAM

To £6,500

We currently have a large volume of vacancies throughout the Birmingham and West Midlands regions, including a wide variety of new jobs at the rapidly expanding E.M.S. Data Centre. COBOL and ASSEMBLER programmers should complete our application forms today as an urgent priority. We have an unparalleled range of vacancies available. In addition to hundreds of client vacancies, E.M.S. also have interesting and challenging vacancies within our Turnkey Systems Division for candidates seeking the opportunities of constantly working on new development projects within a modern, attractively furnished Data Centre. Interviews are held daily at the Data Centre — Why not come along to discuss your career development projects within the Midlands? E.M.S., as the largest recruitment consultancy in the country, has opportunities available for all D.P. staff which are unrivalled throughout the Midlands. Equally, please do not hesitate to complete and return today the attached application form. For only a few minutes initial correspondence the lucrative career opportunities will be forthcoming for you make your time worth the investment Consultant: Don Philp/Denis Filby.

TOP SALESMEN

E.M.S. is planning substantial further development of both our Consultancy and Turnkey Systems Divisions during the coming months. Our Consultancy activities extend across all minicomputer ranges and encompass a wide range of industrial/commercial organisations. Applications must, therefore, present as high level Business Analysts capable of rapidly assessing clients' requirements and providing relevant, reliable, value appropriate or quantifying the relevant consulting experience required in either systems or programming and providing the necessary staff from E.M.S. resources. A vast potential market exists for salesmen marketing resource support.

Equally, our Turnkey Systems Division provided total U.K. coverage.

marketing Honeywell Level 6 mini-computer systems and supporting software to a wide range of U.K. users. Experienced Salesmen capable of developing their own territories are urgently required. A substantial quantity of leads are also supplied by extensive and vigorous advertising campaigns and Road Show ventures. Salesmen must possess an adequate mini-computer knowledge for Turnkey Systems positions. Cars will be provided with substantial base salaries and high prospective incentives. Apply by telephone for interview during the next week at our Birmingham Data Centre. All U.K. territories will be controlled from the pending regional development of other Centres. Consultant: John Wood.

10K-20K (and it is carnable!)

Systems Support Engineers

High salary and excellent prospects in Germany

ITEL is one of the world's largest suppliers of IBM-compatible mainframes, marketing and maintaining a wide range of products throughout the United States and Europe.

As a result of continuing expansion, we are now seeking two Systems Support Engineers for our German operation — one to be based in Munich (who should speak German fluently) and the other to be based in Stuttgart (where German, though desirable, is not essential). ITEL will help those who wish to learn German by providing assistance with both the time and cost of tuition. These two positions offer excellent career opportunities with a company providing advice and guidance to large customers regarding new operating system releases, new hardware announcements, and changes in hardware configurations. Planning and sales support will supplement debugging and general areas of system engineering.

The work is varied and in addition there is no risk of losing contact with the rapid advances being made in computer technology — ITEL ensures that all its staff are kept up to date with the latest developments by providing training facilities for that purpose.

Candidates should have experience with IBM large systems, 370/158 and upwards, plus a good knowledge of Intrinsics. Knowledge of MVS, SVS, VM or DOS/VS is desirable.

Salary and benefits are generous — ITEL can offer you a great deal. Why not give us a call, you've nothing to lose.

Send a C.V. or make a reverse charge telephone call in confidence to Chris Worral — ITEL Deutschland Informations-Systeme GmbH, Euro Haus, Lyonerstrasse, 26, 6000 Frankfurt/Main, West Germany. Tel: (613) 56891.

ITEL INTERNATIONAL

E.M.S. is where the careers are!

We have many contract vacancies advised each week. Telephone now for a Contractor's profile form urgently and we will offer you an unrivalled selection of opportunities each month. Even if you are not available for a month or two, register today and let us reserve top opportunities for you to be phased on to later. Telephone 0782-623665 (10 lines) Don Philp, Don Walklate, John Wood, Selina Mills.

هكذا من العمل

HONEYWELL ANALYSTS AND PROGRAMMERS**HUNDREDS UK****£5000 to £8000**

EMS have a vast number of current vacancies throughout the UK, with large requirements throughout London, Home Counties and the North, to work as consulting support staff at established and new installations. Most of our duties incorporate development of new applications systems and assisting with the introduction of new Honeywell mainframes, or Level 6 mini computer systems, supporting our successful Turkeys Systems Division. Excellent salaries are available for all our Honeywell support staff working throughout the UK with opportunities for later involvement in American contracts if required. A minimum of 1 year's Honeywell experience is required with a wide range of opportunities throughout the group for all applicants. Please, urgently complete the attached application form and telephone initially our Birmingham Data Centre to arrange early UK interviews at a convenient location.

CONSULTANT DAMIAN HANDSLIP

ANALYSTS, ANALYST/PROGRAMMERS**LONDON****TO £8500**

These attractive positions are for candidates with at least 3 years Data Processing experience interested in working as Support Consultants for a major international manufacturer. Duties will include assisting both in post sales conversion exercises throughout the London and Home Counties region, and for senior staff, occasional pre sales feasibility studies. A working knowledge of COBOL programming on any machine will be advantageous. Full product training will be given, with the opportunity to work on futuristic Real Time and Database projects occasionally. Excellent career prospects exist with early progression based on results. The positions will be based in West London.

CONSULTANT DON PHILP

PROGRAMMERS --**SCIENTIFIC****SUSSEX****TO £5250**

Programmers are responsible for the design and programming of Engineering/Simulation applications using low level and high level languages. Simulators are controlled by PDP 11/45 mini computers operating in Real Time. A minimum of 1 year's Assembler experience in a scientific environment is sought.

CONSULTANT CAROL PROUDMAN

**PROGRAMMING
MANAGER****NOTTS****c £5500**

Preference will be for candidates with at least 5 years' programming experience, preferably with significant knowledge of the IBM 370 range working under OS, VS and UMS, PL/I, DL/I and 3790 are utilized. The unit uses a dual processor Date 100 RJE terminal with data validation and data preparation facilities connected to a centralized Birmingham mainframe. The successful candidate will take control of a team of 8 staff, due to expand to 12, and will provide user services both for new applications and maintenance of existing facilities. The post will report directly to the Data Processing Manager.

CONSULTANT DON PHILP

**ANALYSTS AND
PROGRAMMERS****GLASGOW****£3500-£5000 PLUS BONUS**

All candidates should have a reasonable working knowledge of ICL hardware and COBOL programming. The client currently uses ICL 2904 and uses the 7602 concentrator in a Systems environment. Duties include development of on-line systems, investigation of user requirements and systems design, through to programme development and testing. In addition to salaries stated, the company has a self-financing quarterly productivity bonus.

CONSULTANT JOHN WOOD

**PROGRAMMING
MANAGER****STAFFS****c £6500**

Experience of IBM 370 PL/I and Assembler will be essential working under OS/VS1 using CICS. Equally, we seek candidates with some experience of modular programming and a working knowledge of systems programming. The section currently has 12 programmers who will report to the Programming Manager. This position in firm reports directly to the Data Processing Manager. The client has a major industrial group.

CONSULTANT DON PHILP

**PROGRAMMERS TO
SENIOR ANALYSTS****OXON****£3500-£5500**

A large engineering group, located in attractive surroundings, have a quantity of vacancies for all grades of staff at present. Production Control experience is a major advantage. A knowledge of COBOL for Programming vacancies will be preferred. Hardware is optional. Educational attainments should be 'A' levels as a minimum. Duties will incorporate Analysing and Designing specific parts of Information Systems under the supervision of project leaders. Equally, you would specify, write and install programmes necessary to achieve successful implementation, and assist with the cost estimating of systems. Relocation assistance up to 2 months salary will be given where appropriate.

CONSULTANT DON PHILP

**ANALYST
PROGRAMMER****KENT****TO £5500**

Candidates must be experienced on ICL 2903 or 2904 equipment. RPG II programming proficiency is also sought. The machine runs payroll and ledger packages for a number of subsidiary companies. The successful candidate will be expected to maintain and enhance these particular systems. Ability to instantly identify and resolve any particular machine problems will be important, as will the ability to assess user requirements and to develop and install appropriate systems. The position will report directly to the Data Processing Manager.

CONSULTANT CAROL PROUDMAN

**4 COBOL
PROGRAMMERS****EAST LONDON****£4500-£5300**

Bureau vacancies are currently outstanding for experienced commercial programmers to work on customer account support. Duties will incorporate programming to specifications produced by the Analysts and testing to the Analyst's satisfaction. Some guidance of trainees will be involved, leading eventually to supervisory duties. Quality consciousness must be maintained at all times in support services to user clients.

CONSULTANT JOHN WOOD

**ICL 2900 SUPPORT
TECHNICIANS****READING****Negotiable**

Primarily these positions will involve supporting and maintaining all 2900 series equipment provided by Reading Systems Centre and to provide technical support to Operations and Users of those services.

Candidates will ensure that all services are supported to a level conducive to the achievement of RSC objectives, including 'out of hours' support. Equally, you will investigate systems failures with a view to resolving them on-site, or progressing them with the appropriate authority for the fastest possible resolution. Further extensive job specifications will be forwarded on request.

CONSULTANT DON PHILP

TIMESHARING MANAGER**STAFFS AND BIRMINGHAM****Negotiable and profit sharing**

EMS are currently developing a Timesharing Division, with Supporting Packages, or custom built systems as required, operating on an ICL 2904, and later, utilizing also Honeywell machines expandable to 2 Megabytes. We require at this point, an experienced Operations/Programming Manager interested in helping build a division from initial conception towards a high annual turnover level. Client negotiations are already proceeding towards the capture of a small number of large prospective accounts to fully utilize the existing equipment to its total expansion level. Ideally, candidates will have a sound knowledge of ICL hardware, preferably also ICL 2904 series, although conversion training would be given to otherwise suitable applicants. Comms. knowledge will be essential as will the ability to programme in COBOL.

ICL 7602 facilities are directly linked to our Birmingham Data Centre with this unit requiring constant support from the Newcastle-under-Lyme machine.

Further 7602 systems will be linked throughout the Midlands and North following marketing activities in hand at present. Knowledge of packages would be an additional asset, but not essential. Most important is that candidates have the willingness and motivation to assist a new venture starting on a small scale at present, achieve a successful market growth and in turn share enhanced career prospects from the success of the operation.

An attractive salary will be negotiated according to the relevant experience of each candidate, with further benefits for future assessment when profitability is reached as a new operating division within the group. North Staffordshire offers attractive low cost housing, with good amenities. Relocation assistance will be provided where appropriate. Please complete the attached application form in the first instance and return to JOHN WOOD, GROUP MANAGING DIRECTOR.

**ANALYSTS AND
PROGRAMMERS****EAST LONDON****TO £6500**

A commodity trading group using IBM 370's under Power VS, with Shadow as TP monitor to New York require numerous extra staff to assist with new developments. Analysts should be aged 20 to 25 and have a minimum 18 months-2 years' experience. He will work directly with the Data Processing Manager. Programmers should have at least 1 year's PL/I experience and will be given the opportunity to learn other languages as appropriate. A contributory Private Pension Scheme exists, in addition to other fringe benefits. Future mortgage loans are available in appropriate cases. Programmers will be given basic aptitude tests during the interview.

CONSULTANT JOHN WOOD

SENIOR ANALYSTS**EAST LONDON****c £6500**

A major bureau group have urgent requirements for experienced Senior Analysts. Duties include systems specifications, systems design and some support during pre-sales activities. Ability to liaise with users, support programmers and operators will be important. Equally, ability to co-ordinate projects will be sought, including Planning, especially during implementation. The positions involve a high degree of user contact.

CONSULTANT JOHN WOOD

PROGRAMMERS TO SYSTEMS CONSULTANTS**LONDON****£5000-£8000**

A software house operating from SW London have numerous vacancies for staff to work both on new systems and maintaining current systems. Hardware preference will be for both ICL 1900 and IBM 360/370 series. Periods of training will be given, with the opportunity to work on futuristic Real Time and Database projects occasionally. Excellent career prospects exist with early progression based on results. The positions will report directly to the Data Processing Manager.

CONSULTANT DON PHILP

COBOL PL/I AND ASSEMBLER PROGRAMMERS**LONDON AND UK****£3500-£5500**

EMS are inundated with thousands of current vacancies for young programmers with 1 to 4 years' experience. Irrespective of UK location, programmers interested in a move anywhere throughout the UK, are guaranteed to many potential interviews you won't be able to cope with the response. EMS place over 85% of all candidates within this category within the first week of approach. Most UK Data Processing Managers use EMS as the only really viable recruitment consultancy to achieve positive early results. So, if it's a good new career move you're seeking, with the best financial rewards available, complete the EMS career form attached and just watch the results. We guarantee you'll be joining the thousands of other, satisfied users each year.

CONSULTANTS DON PHILP CAROL PROUDMAN SUE ADAMS

ANALYSTS**LONDON, HOME COUNTIES AND UK IN GENERAL****£4500-£7000**

EMS receive hundreds of vacancies each week from companies urgently seeking experienced Analysts to work in a wide variety of roles from Juniors to Systems Managers. Vacancies are too numerous to advertise. EMS guarantees that for appropriately experienced and qualified Analysts, you'll be inundated with interview requirements within a week of applying to us. There's no facility to match the EMS service nationwide, a consultancy reaching every installation in the country for requirements weekly. Even the publications have not failed to mention EMS as the only agency to promote your career interests and obtain an attractive reward for you by completing the attached career form today.

CONSULTANTS DON PHILP JOHN WOOD CAROL PROUDMAN

IBM OPS SUPERVISORS**KUWAIT**

Experienced IBM Ops. Managers and supervisors capable of taking a supervisory role in Kuwait installations and training Arab nationals are urgently required for major new opportunities with interviews to be held in London from the 20th of August onwards. Knowledge of OS and JCL will be advantageous although suitably experienced DOS candidates will also be considered. Distinct preference will be given for single people or married couples with no children. Children will be a major obstacle for these particular vacancies due to restricted family accommodation opportunities for wives. Excellent prospects exist to save significant sums of money with additional attractive job opportunities for wives. Consultant John Wood.



EMS CONSULTANTS LTD
61 LOWELL STREET
NEWCASTLE UNDER LYME
SOUTH DORSET, STURTON
Tel: 0936 36

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SOUTH DORSET, STURTON
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SURNAME Other Names		Telephone	
Address		Home	
Post Code		Bus	
Age	Date of Birth	Place of Birth	Nationality
Married	Children	Car Owner	Driver
Position Required		Required Salary Range	
Present Position		Salary	
WHERE DO YOU WISH TO WORK			
Within U.K.	Yes/No	Acceptable Areas	Abroad
Will you move	Yes/No		Yes/No
NUMBER OF YEARS EXPERIENCE			
Operating	Programming	Systems Design	Systems Analysis
Management		Total	
Available for Interviews			
Available for Employment			
DETAILS OF SECONDARY AND FURTHER EDUCATION			
Schools	Date	Examinations Passed	
College/University	Date	Examinations Passed	
Business Courses with Dates			
1. Present Employer			
Position	Town		
Date Joined			
TYPE OF INSTALLATION			
Commercial	Bureau	Insurance	Scientific
Manufacturing	Banking	Education	Engineering
HARDWARE			
OPERATING SYSTEM			
LANGUAGES			
Software or Packages			
On-Line	Real Time	Time Sharing	
R.J.E.	Tele Processing	Data Base	
APPLICATION AREAS YOU HAVE BEEN INVOLVED IN (Please Tick)			
Cost Accounting	General Ledger	Manpower Planning	Personnel
Budgeting	Credit Control	Stock Control	Payroll
Forecasting	Order Processing	Production Control	O.R.
Corporate Planning	Marketing	Petrochemicals	Radar
Sales Ledger	Distribution	Linear Programming	Statistics
Purchase Ledger	Traffic Analysis	Simulation	
Projects Completed		Responsibilities	
2. Previous Employer			
Position	Town		
Date Joined			
TYPE OF INSTALLATION			
Commercial	Bureau	Insurance	Scientific
Manufacturing	Banking	Education	Engineering
HARDWARE			
OPERATING SYSTEM			
LANGUAGES			
Software or Packages			
On-Line	Real Time	Time Sharing	
R.J.E.	Tele Processing	Data Base	
APPLICATION AREAS YOU HAVE BEEN INVOLVED IN			
Cost Accounting	General Ledger	Manpower Planning	Personnel
Budgeting	Credit Control	Stock Control	Payroll
Forecasting	Order Processing	Production Control	O.R.
Corporate Planning	Marketing	Petrochemicals	Radar
Sales Ledger	Distribution	Linear Programming	Statistics
Purchase Ledger	Traffic Analysis	Simulation	
Projects Completed		Responsibilities	
PLEASE CHECK THAT EACH SECTION HAS BEEN TICKED APPROPRIATELY			
ADDITIONAL INFORMATION			
General			
Data Processing			
Terminals			
Software/Packages			
Application Areas			
Projects and Responsibilities			

John Wood

TECHNICAL PROGRAMMERS

International Transformation offers you all the advantages of contract work—and none of the disadvantages.

Advantages which include:

Technical challenge—the rapid evolution of computer technology has set the demand for an efficient transformation service at a premium. Armed with over 150 software conversion tools, you will be instrumental in ensuring that our highly disciplined and automated technique matches that demand.

A wide variety of machine and working environments—our clients operate in all sectors of industry and commerce, and the range of their activities is phenomenal. As far as third generation hardware is concerned, we have recently extended our expertise to cover Univac 1100, Honeywell (GCOS), IBM 360/370, ICL 1900 and 2900, System 4, and CDC Cyber series.

Travel—we are engaged in a number of on-going projects in France, Germany, and Holland; and although you will be based at our offices in Richmond, you can expect to spend approximately 20% of your time abroad. Consequently, a second European language would be a distinct advantage.

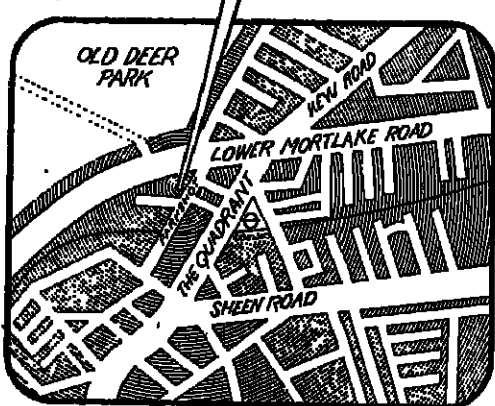
High rewards—initial salaries of between £4,000-£7,000 will be negotiable according to experience, and will be supplemented by a range of benefits which includes non-contributory pension and life assurance schemes, BUPA, and permanent health insurance. The benefits of working overseas include a tax rebate on return, and accommodation and tax-free cost-of-living allowances.

We're looking for practical self-reliant men and women, with proven problem-solving ability and a genuine interest in the machine rather than the user aspect of advanced applications.

We can offer you everything contract work can, and at least two things it can't: Security and oppor-

tunity. A subsidiary of Rand Information Systems of San Francisco, we have already established a ten-year record of success in the US; our growth rate is accelerating all the time, and we are in a position to allow you virtually unlimited scope for diversification and development. First-class technical training is always available, and we'll be only too pleased to furnish any advice and career guidance you may need.

If you've got at least a year's programming behind you, get in touch.



Or better still, drop in and see us. We'll be in our offices every night next week up until 8.30pm, and we'll very much like to meet you. If you can't make it, please ring Michael Whetton on 01-940 6412. Or write to him at the address below.

Rand Information Systems Ltd

(formerly Brandon Transformation Services Ltd.)
Eagle House, 1 Parkshot, Richmond,
Surrey TW9 2RD

Databasesolve Databasesolve Databasesolve

**Programmers-
Analysts...**

**Looking for
more money,
A new challenge,
a different
application
or
just a change
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software engineer/ programmer

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The successful applicant will be required to write in high level language for the new installations as well as in the machine code of the existing computers. He/she will contribute either engineering know-how with experience of writing programmes or experience of programming allied to an understanding of computers gained in a development environment with a computer manufacturer.

Candidates should be educated to at least HNC level with the relevant experience or ideally be educated to degree level. In addition to a salary of around £5,600 which is to be reviewed in October, and an excellent non-contributory life assurance and pension scheme, we offer discount on company products and facilities and generous assistance with re-location costs where applicable.

If you are interested please phone Miss L. Wilson on 031-656 2591 Ext. 47/48 and ask for an application form or write to the Recruitment Department, Scottish and Newcastle Breweries Limited, 180 Canongate, Edinburgh EH8 0LW giving full c.v.

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Wallingford, Oxon.

to supervise ICL 1904S with multi-access facilities, running under George 3, and take responsibility for scheduling the work and supervising Computer Operators. There will be opportunities for standard software work, including the maintenance of the operating system and the development of system programs and macros.

Applicants (normally aged under 27) should have a Degree/HNC or equivalent in an appropriate science subject and at least one year's operating experience. Appointment will be as Scientific Officer (£340-£440, plus shift allowances) with starting salary according to experience and qualifications. Good housing prospects for married people moving into the area.

For further details and an application form to be returned by 5 September 1978 write to Director, Hydraulics Research Station, Wallingford, Oxon, telephone Wallingford (0491) 35581 ext. 317. Please quote ref: SA/25HC

Hydraulics Research Station

**Science
Group**
CIVIL SERVICE

UNIVERSITY OF NEWCASTLE UPON TYNE NORTHUMBRIAN UNIVERSITIES MULTIPLE ACCESS COMPUTER TEMPORARY PROGRAMMING ADVISER

Applications are invited from graduates to join a small group within the NUMAC computing service concerned with advising, planning and providing documentation on the use of computer programs of a statistical nature. Applicants should have a good knowledge of computational statistics and an understanding of the social sciences. The Computing Laboratory has excellent facilities including powerful IBM hardware with interactive capability and a large repertoire of library programs.

The appointment will be for one year and will be made on one of the following scales according to age, qualifications and experience. Range 1A: £3,600-£5,178 or Range 1B: £3,600-£7,308 per annum. Membership of the appropriate University superannuation scheme will be required. Further particulars may be obtained from the Registrar, The University, 6 Kensington Terrace, Newcastle upon Tyne, NE1 7RU, with whom applications (3 copies) together with the names and addresses of three referees, should be lodged not later than 28th August 1978. Please quote reference CW.

CONTRACTS

At least 2 years' OPERATIONS experience?

If you are a freelance operator now, or intend to go freelance in the near future, contact us for details of our current and future assignments in all areas of the U.K.

The ability to communicate and an intelligent attitude towards freelance work is considered essential.

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IBM OS VS1/2 OPERATORS
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Notice Required/Date Available (delete) _____
Areas Preferred: First Choice _____ Second Choice _____
Experience to date: (Last Position First) _____
Company Name _____ From _____ To _____ Hardware _____
and Location _____ Mth/Year _____ Mth/Year _____ Operating Systems/Software _____

Date _____ Signature _____
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City of Salford

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Post Reference: 1518/CW

SYSTEMS PROGRAMMER Grade A.P. 6/8.0.0.1.
£4773-£5886 inclusive of supplements
Post Reference: 1518/1/CW

PROGRAMMER
Grade A.P. 4. £4245-£4262 inclusive of supplements
Post Reference: 1518/2/CW

Applications are invited for the above posts in the systems development section of the City of Salford Computer Centre. Applicants for the post of Senior Systems Analyst must have a minimum of three years' experience of systems analysis and have designed and implemented at least one major system. Applications will also be considered from systems analysts with less experience and also experienced programmers who wish to move into systems analysis.

Applicants for the post of Systems Programmer should have at least three years' programming experience. The successful applicant will be expected to design computer systems from system specifications prepared by systems analysts and to co-ordinate the work of other programmers assigned to the project.

Applicants for the post of Programmer must have at least one year's programming experience in COBOL or some similar language. A working knowledge of PLAN, communications programs or TP software will be a distinct advantage. Conversion training will be given to successful candidates whose experience has been on computers other than ICL 1900.

These posts are permanent, superannuated and subject to the satisfactory completion of a medical examination. Commencing salary will reflect experience and qualifications. Please write or telephone 051-793 3188 for an application form quoting post reference number to the Personnel Manager, Salford City Centre, Swinton M27 2BN, to whom they should be returned by 28th August 1978.

PROGRAMMERS AND ANALYST/PROGRAMMERS ★ COBOL ★ PLAN ★ ASSEMBLER

PERMANENT or CONTRACT to work with our existing project teams involved in DEVELOPMENT and CONVERSION for clients in WEST LONDON/NORTH LONDON/CENTRAL LONDON and YORKSHIRE/LANCAIRE.
LONDON CONTACT: IAN GOLD — 01-388 0036
YORKS/LANCS CONTACT: JEFF WORSLEY — 0742 26069
BEST COBOL PROGRAMMER
CONTRACT or PERMANENT (required URGENTLY for 9 months. Development assignment in SOUTHAMPTON) to work with our existing team.
CONTACT: CHRIS PHILLIPS or DAVE ROBERTS on 01-388 0036.

Fraser Williams computer consultants

West Yorkshire Metropolitan County Council

OPERATION/TECHNICIAN POST REF: TF 34001
TS 23732-24146 inclusive of supplement

The Urban Traffic Control scheme involves the computer control of traffic signals in Leeds and Bradford, using closed circuit television facilities to monitor traffic. Control Centres in both cities will operate from 6.7 am to 7 am Monday to Friday, acting also as fault reporting centres and manned by Operator/Technicians on a shift basis. Working from either Control Room duties will include first line maintenance and procedures on the equipment installed at the Centres and on the signals. Suitable qualified applicants will have a light current electrical engineering background or relevant operational traffic control experience. Driving licence required.

Application forms may be obtained from Directorate of Planning, Engineering and Transportation, Room 288, County Hall, Wakefield and should be returned by 30 August 1978.

NEW TECHNICAL SUPPORT POSITIONS IN OUR PROFESSIONAL SERVICES DIVISION

Our Professional Services Division provides a wide range of consulting services to Industry, Commerce and Government - both independently and in support of our Systems and Data Services divisions. These new positions arise in expansion of our technical support group involved in pre- post-sales assignments.

WHO IS CONTROL DATA?

WE are a computer company employing 11,000 people worldwide.

WE have a firm commitment to the computer industry, the United Kingdom and the training and advancement of people.

WE are a world leader in the provision of computer services, large-scale computers and peripheral equipment.

This position is continually strengthened by our ongoing investment into more advanced products and services. Such a range of activities presents considerable scope for the advancement of personnel at all levels and disciplines.

WE offer a challenging and rewarding career opportunity with involvement in software development, installation and support, together with some sales-related activities in the areas of system configuration and benchmarking.

WE are looking for technical people of the highest calibre and other salaries and associated benefits commensurate with the demands of the post.

If you have the qualities and experience we are seeking - please read on.

Please write to Mrs. Margaret Spence with full details of your career to date.

Professional Services Division, Control Data Ltd., 22a St. James's Square, London, S.W.1. Telephone 01-930 7344.



MORE THAN A COMPUTER COMPANY



WHO ARE YOU?

YOU will be intelligent, enthusiastic, articulate and self-motivated.

YOU will be at least 25 years' old with several years' systems software experience. A knowledge of Control Data's Cyber 770 operating systems, particularly NOS-BE, would be advantageous.

YOU may have a degree in computer science but more essential is a sound knowledge of operating systems, the ability to quickly comprehend new concepts and to communicate with customers.

YOU may expect the possibility of travel in the U.K. and Europe.

Data Processing Recruitment Consultants

Main-Frame + Mini Programmers Greater Manchester Salaries: £6-9.5K (a.a.e.)

A very prestige client with headquarters in London and regional offices located in Cheshire and throughout Europe urgently requires the following: Real-Time and on-line Programmers, Systems and Data Base designers and compiler specialists with 2-5 years experience.

Of particular interest would be people with relevant experience in one or more of the following: Ferranti DEC with Basic, RTL II or Coral and IBM or ICL with Assembler, PL/I or COBOL. Also IMS or similar

and Data Base design. The scope of projects is both broad and demanding and certainly in keeping with the prestige of this client. You will play an important role in project development and the opportunity to enhance your technical expertise is one of the attributes of working with this reputable group. Fringe benefits are well above average and full relocation expenses will of course be met.

Message Switching + Communications Holland Salaries: £10-16K + Top Benefits

A prestige International Client is seeking to expand and establish new project teams working on wide and varied applications areas with emphasis on Data Communications, Message Switching and Mini Software.

Can you picture yourself working in the forefront of mini systems applications and software development? Become a member of one of numerous specialist project teams in which you will make a valuable contribution whilst at the same time expanding your own frontiers of knowledge and experience.

This is a unique opportunity to enhance your career by extending your horizons and developing State-of-

the-Art D.P. technology.

Successful candidates are likely to be either graduates (Computer Science or Maths) or have a very solid background in advanced computer applications and are probably aged between 23 and 35. You are presently likely to be either a Systems Designer/Consultant, Analyst Programmer or a programmer in a Mini computer environment with extensive Assembler experience. Any specialist expertise in the areas of Data communications, Message switching, computer networks, Process-control or Mini computer software will be considered particularly advantageous.

Decnet or X25 Denmark and Netherlands Salary: £12-15K + Outstanding Benefits

When it comes to State-of-the-Art Real-Time Mini Software our clients defer to no-one. They are internationally regarded as "technical frontier pushers" and as a valued project team member you will share their prestige and acclaim.

To meet a continuous phased growth programme our clients are establishing several new project teams requiring Analysts and Programmers. Both will be well versed in Mini Assembler and the former should

have some design and implementation experience. Candidates, ideally between the ages of 23 and 30 years should have a willingness to relocate for a meaningfully extended period to either location. In the longer term, our clients can offer career postings in Spain, Germany and Middle East. Meanwhile, every assistance will be given to candidates in relocation. We or our clients will conduct initial interviews throughout August.

IMS Analysts + Programmers London + E.E.C. Salaries: £16K (E.E.C.) £9.5K (U.K.)

A multi-national U.S. Corporation specialising in Teleprocessing and Network design and implementation has retained Logistix to seek out and identify senior personnel for their Central London, German and Dutch offices. In particular they require Business Analysts and Programmers. Suitable applicants must have current IMS (DB or DC) expertise preferably in an O.S. environment. Programmers will be using either COBOL or PL/I but BAL would be acceptable. Any additional Database experience would be of added interest to our clients.

as would knowledge of either TOTAL, SHADOW or similar software.

The scope of projects in which our clients are engaged is very broad-based and should appeal to even the most demanding and forward thinking candidates. The very high salaries reflect the prominence which our client places on the acquisition of these key personnel. Early interviews are envisaged and offers will be made within 10 days.

Project Manager Middle East £18K (Tax free)

We are retained by a U.S. consultancy to recruit a Project Manager (ideally aged 30-40 years) offering an in-depth knowledge of both Data Base and teleprocessing techniques in an IBM 370 environment.

The successful candidate will be required to supervise and control all Data Control and Data Entry staff whilst managing the feasibility, design and implementation of new computer systems. Additional responsibilities will entail the provision of training to aspiring data processing Arab nationalists; the development of the recently formed training

department and the co-ordination of inter-departmental liaison.

In addition to a tax free salary, the company offers a 35% regional allowance, free furnished accommodation and financial assistance in the purchase of a car. In the first instance, you will be offered a one year's renewable contract. Please note however, that we can only take applications from those who will consider a BACHELOR posting. Interviews will take place in our offices between 14th and 28th August and offers will be made two weeks thereafter.

Logistix, Freeport 32, London W1E 3YZ
01 491 4636
(Reverse charges)
Telex 28800



Avon House, 366 Oxford Street, London W1N 9HA

MYRIAD

EXTENSIVE USER LIAISON

ANALYST/PROGRAMMERS

NORTH LONDON/SOUTH HERTS

c £6000

Our client, a major retailing organisation with extensive outlets throughout the U.K., require top-class technicians to help maintain their lead in the market.

The company is currently implementing a comprehensive development programme incorporating an upgrade in machinery and the installation of on-line applications. The Systems and Programming team work to highly professional standards and encourage the use of latest techniques including DATABASE.

The successful applicants should be self-motivated and be capable of understanding user requirements and so gain job satisfaction in assisting with the implementation of successful projects. Candidates must have a minimum of two years' commercial COBOL programming experience, and be involved in or looking to enter the field of user liaison.

Apart from the challenge of new systems on an upgraded mainframe using the latest processing techniques, a competitive salary, Christmas bonus, flex-time, luncheon vouchers combine to make this an excellent move in one's career progression.

Ref. N1/1008

MYRIAD APPOINTMENTS LIMITED Computer Personnel Consultants
Telephone or write to:- 30 Fleet Street London EC4Y 1AA 01-353 0981 (24 hrs)

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You undoubtedly share more with Morgan Guaranty than you realise. For instance, like us, you're looking for the best. Like us, you probably also realise that it pays to be better.

So, that's why we give a starting salary of up to £4,850 a year with an annual bonus of up to 6%, rising to as high as 15%, mortgage facilities at 3% interest rate, a subsidised staff restaurant and a series of excellent additional benefits.

As an international Corporate Bank with an outstanding reputation, you could hardly find better career prospects than those available at our UK Data Centre in Stratford. Our modern building is only a minute away from the tube station and bus terminal and there is ample free parking for those with their own cars.

Our equipment is also likely to be better than the hardware you're currently using. An IBM 370/138 and 370/135 (with a 370/148 on the way) means you should have experience of DGS/VS or preferably either POWER/VS or CICS/VS and be prepared to work shifts.

If you feel you have what it takes, we would very much like to hear from you.

Just write to Kathryn Riley, Head of Personnel Administration & Recruitment, Morgan Guaranty Trust Company of New York, P.O. Box 161, 33 Lombard Street, London, EC3P 3BH. Or telephone her today on 01-555 3111 extension 2747.

it pays to be better.

THE SALES BIT

Remember the 4P rule

WE were involved the other day in an assignment for recruiting marketing analysts and one of the apparently simple questions we asked was: "What is marketing?" The answers we got were wide and varied.

Many saw it as a discrete activity closely related to public relations, advertising and market research, while some gave the impression they thought it was a way of avoiding the use of that nasty word - selling!

One only has to look at the diverse ways in which companies within the computer industry organise their sales and marketing organisations to see that there are many different opinions concerning the purpose and importance of marketing. For some, marketing is an essential function; to others it is a total void.

There are many definitions of the word marketing. My own company uses the abbreviation 4P. ● The right Product ● In the right Place ● At the right Price (Profit) ● With the right Promotion

A gross simplification, perhaps, but it is only intended to describe the function of marketing. One must then consider all those aspects of a company's operation which have a direct or indirect effect on the creation of a product, making it available where and when it is required, ensuring it is both competitive and profitable and informing potential buyers that it will satisfy their needs. Any department involved in any of these activities must interact with the comprehensive function of marketing.

Complacency is a close companion of success which makes it very tempting to leave tomorrow to look after itself, particularly under the influence of the "annual budget syndrome."

Many products within the computer industry are actually an emulation of some other company's success, or a development on the basis of "Me Too" technology, which assumes that if one company has created a demand, all that has to be done is to produce a cheaper copy in order to ensure success. In a fast expanding market, that is feasible, but come another 1871 and those companies that have their 4P wrong run a severe risk of going to the wall.

TRADER

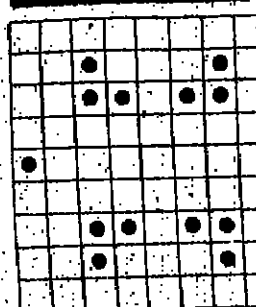
Catalogue of aids for teachers

A CATALOGUE* of books, wall charts, films and other aids for school teachers has been produced by the British Computer Society. Details given with each item include the price, a brief description and the address of the distributor.

The catalogue covers books, wall charts, simulated games, logic tutors, overhead projector transparencies, teaching packages, films, slides, film loops, video programmes and periodicals. There are also lists of addresses of examination boards, of BCS branches and of branches of the computer education group.

*Computer Educational Aids and Resources for Teachers, 30 pp. 96p and 10p for postage. National Committee for Audio-Visual Aids, 38 Queen Anne Street, London W1M 0AL.

Puzzle answer



Marketing is an essential

Real-Time Systems/ Programming

up to £6000 p.a.

Mini-based
real-time
projects

West London

Programming
+ analysis/
design

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travel
opportunities

Generous
benefits

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facilities

IAL, with a 30-year background of communications systems involvement, is currently engaged in the supply of computer-aided despatch systems, both in the UK and overseas. Vacancies exist at all levels within the Computer Systems Division for staff to work on projects based on single and multiple Nova/Eclipse systems.

The positions are based in West London (close to the M4 and airport). Good salaries and associated benefits are offered and overseas travel for short periods is likely, for which generous additional allowances are paid. These are opportunities for involvement in an exciting line of development with enormous potential.

Programming Project Leader

A Project Leader is required to lead a small team of analysts/programmers in the design and implementation phases of mini-computer systems. Experience of real-time or mini-computer systems is essential.

Systems Analysts

Analysts are required to work on the design of real-time mini-computer systems. They must be prepared to work with the minimum of supervision, communicating directly with customers. Experience of real-time systems either at the programming or analysis level is essential.

Systems Programmer

A Programmer is required to join a small systems team supporting IAL's applications programming teams. He/she will be responsible for all aspects of Data General and IAL systems software configuration and support on Eclipse AOS and Nova RDS systems. Whilst experience in Data General software is desirable, applications are invited from programmers with systems experience on similar multi-programming or multi-tasking systems.

Analyst/Programmers

Analyst/Programmers are required to work on the design and implementation of real-time mini-computer systems. Applicants should have experience in two or more of the following:

* Mini-computer systems * FORTRAN * CORAL * ASSEMBLER
* Real-time software design * Data General software
* Multi-tasking operating systems

Please write or phone as soon as possible quoting ref. no. 377, to:
The Senior Recruitment Officer, IAL, Aeradio House, Hayes Road,
Southall, Middlesex. Tel: 01-574 5134.

IAL



Senior Programmer

Hertfordshire

Rank Xerox Manufacturing Group in Welwyn Garden City utilises some of the most advanced engineering techniques in the production of a wide range of electronic assemblies and special materials.

Our small, but professional computer department develops and supports local on-line and batch systems. Hardware is PDP 11/34's for on-line systems and batch and time sharing links to large Rank Xerox Honeywell and IBM datacentres. Systems are written in COBOL, BASIC + and APL.

We now have a vacancy for a Senior Programmer to be involved in developing, installing and maintaining:

- * on-line systems using BASIC +
- * batch systems using COBOL with timesharing program development terminals
- * timesharing systems using APL

You must have at least 2 years COBOL or BASIC experience and be able to produce a variety of easily maintained programs quickly.

Salaries are competitive and generous benefits include excellent pension, life assurance and sickness benefit schemes, relocation expenses, 4 weeks holiday, rising to 5, subsidised staff restaurant and an active sports and social club.

So, if you've got the enthusiasm to learn new skills and want a job with real involvement in a stimulating environment ring Andy Kennedy or Peter Brinkley now on Welwyn Garden 23434 ext. 3348, or write to either of them at Rank Xerox Limited, Bessemer Road, Welwyn Garden City, Herts.

RANK XEROX

GREENFORD, MIDDLESEX

SALARY: NEGOTIABLE

ASSEMBLER PROGRAMMER

COMPANY:

Perivale-Gütermann Ltd. is an expanding Company manufacturing high-quality Sewing Threads, part of a Swiss-owned Group of Companies.

INSTALLATION:

ICL SYSTEM TEN on line equipment with V.B.U. a controlled by a small team who are developing a tailor-made system to meet the Company's needs.

POSITION:

Applicants should have a minimum of one year's experience with Assembler, preferably in an industrial environment. Ability to communicate effectively with users is essential.

Our pleasant offices are situated in Perivale with car-parking facilities available and we offer a full range of employee benefits.

Please write or phone: Personnel Department, Perivale-Gütermann Ltd., 22 Weddworth Road, Greenford, Middlesex. Tel: 01-628 6000.

SAFE COMPUTING LIMITED

Safe Computing, a subsidiary of Chubb, is installing a 2860 with communications facilities at West Bromwich in September this year. The staff we now seek will initially be required to work on our 1903A at Wolverhampton but will be expected to transfer in due course.

COMPUTER OPERATORS

£3842-£4240

Applicants should have at least 6 months' experience, preferably on 1900 equipment.

DATA CONTROL CLERK

£4000

Applications will be considered from candidates with a general computer background, although specific experience is preferred.

In addition to the above salaries, the usual terms and benefits of a large company will apply. Please write in the first instance giving details of age, qualifications, and experience, to:

J. A. THOMAS,
Computer Operations Manager
Safe Computing Limited
PO Box 81
Wednesfield Road
Wolverhampton WV10 0EW

01 on 1349

CLEVELAND AREA HEALTH AUTHORITY RESEARCH ASSISTANT (MEDICAL PHYSICS)

Applications are invited for the above post. The successful candidate will assist in a study of electrophysiological techniques for the early diagnosis of disease in children using a system based on a micro-computer. Candidates must have a good honours degree preferably in computer science or physics with some experience of computer programming. The post will be suitable for a year in the first instance. An application should be made to Mr P. Powell at the above address. Telephone Number 0842 248002. Etn 28

Applications should be made to the Administrator, North Riding in County, Newcastle Road, Middlesbrough, Cleveland TS1 5JE. Enquiries about the above post should be made to Mr P. Powell at the above address. Telephone Number 0842 248002. Etn 28

UNIVERSITY OF SALFORD COMPUTING LABORATORY

Applications are invited for the post of **COMPUTING OFFICER** (Systems Software)

The Laboratory provides a general computing service to the University based upon an ICL 1904S and a PDP 11/40. The Laboratory is also highly involved in the North West Universities Network project which links five universities. The main duties of the person appointed will be to enhance the George III computing system of the 1904S to continue the network development and in the on-going provision of the overall 1904S service. The salary will be in the range £3,800 - £8,175. Further particulars and application forms may be obtained from the Registrar, Salford University, Salford M6 6PU, and should be returned by 28 August, 1978, quoting reference CL/SW/GW.

Ascii through the Logic Gate

An epic in 32K words,
by Richard Forsyth

Block 10 (Block Contains 2 Characters)

Hex and Zap are still up in their secret hideout in the Sierra Nueva, waiting for Cleo and Lambda; but there is no sign of them.

THEY spent the first day clearing rubble out of the entrance tunnel and generally tidying up. It was thirsty work. The water in the little lake, which had been so intensely blue and cold, was now clouded and, Hex noticed, tepid; but it was all they had to drink.

Next they set about trimming their access overheads by purging temporary files. Being androids, and therefore accustomed to having a distributed database to back them up, they were worried about the long-term ill-effects of data deprivation. They had heard frightening stories of what might happen to androids isolated from the Network. Hallucination, psychosis and even parity failure had been mentioned.

They discussed various possible solutions, and decided that the best stopgap would be to modify the micro that Dr Null had given Hex on his deathbed to act as stand-alone back-to-front-end processor responsible for organising their offline storage, and Lambda's when she arrived.

Zap had thoughtfully brought a bag of assorted chips when he fled the research station, and he was soon happily immersed with Hex's soldering iron in the delicate business of TTT-knitting, otherwise known as logical circuit design. Hex left that side of it in his capable hands and began thinking about the software. Since the essential medium for reliable system design (the back of an old envelope) was lacking on this occasion, he made do with the ragged scrap of paper that Dr Null had called his blueprint for an anti-data device.

Half-way through, out of curiosity, he turned it over. It looked too simple to be of any use.

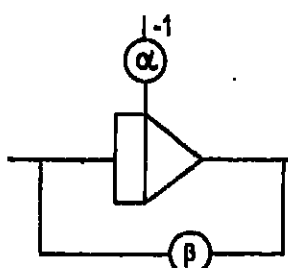
He showed it to Zap.

"What do you make of this?"

Zap held it at arm's length.

"It looks like an old analogue diagram. What's it supposed to be?"

"Dr Null claimed it was a



black noise generator, capable of obliterating data patterns by feeding back a negated image."

Zap turned the paper upside down and squinted at it. "No," he said, "it's only an exponential decay function. He hasn't even done the scaling. Might as well tear it up." He handed it back.

With that he returned to his soldering. Hex shared his scepticism, but decided to keep it nevertheless until he had a more convincing explanation of what it did. He tried to get on with his system specification, but there was something on his mind.

"Zap," he asked, "What made you join us and betray the System?"

Zap looked up. "We really had no choice. Once you and Cleo had called on Lambda she either had to turn you in straight away or throw in her lot with the other side: you can't keep secrets from the Network. And once she had made up her mind, my course was obvious too." Then he shrugged. "Besides, a being of my talent - it had to happen some day. I'm an instruction-set artist. When I started they needed people like me. Programs were hand-coded in those days. Now it's just a question of sticking together a couple of off-the-shelf modules and away you go - no creativity

© 1978, Richard Forsyth, RAIIR Timesharing.



involved. It's the same with hardware too. The System can't make use of my kind any more. I used to have responsibility for major projects, but I had hit a dead end."

"I see. No job satisfaction."

"Yeah. That's why I have a few good words for James Hock and his mangy old text-retrieval system. He's totally incompetent of course, and his program's more full of bugs than a maggot's nest, but at least he tries. He's been up and down the country trying to hawk it to anyone who'll listen. But it doesn't work, eh?"

"Actually, that's not the point. You or I could make it go in two minutes flat. The reason no self-respecting installation will touch it is that it is hand-made. It was designed and coded by one person. It doesn't conform to the guidelines laid down on standards. It uses unorthodox control structures. It's too messy to be maintained automatically. Above all, it's not plug-compatible."

Hex thought about this, then looked down at his own scribbled jottings. To him it represented a transaction-processing monitor in embryo, to anyone else it would be an indecipherable scrawl. "Well if you like unstructured software, I guess you'll approve of mine."

Zap laughed. Through the first day, these activities kept them occupied, but as night approached they became increasingly worried about the fate of Cleo and Lambda. When it was dark they sent Ascii to guard the tunnel entrance and sat in the cave.

"What do we do if they don't turn up?" Hex asked. "I don't know."

"We can't stay here for ever."

"Why so soon? They think they bombed me out of existence here. And if they know I'm on the loose again they will make them mistrust whatever extrapolation function they used to locate me."

"I wouldn't bank on it. They're very thorough, and they have a lot more processing power than we have. If you want to be rational about it, our position is hopeless. All we can do is make some kind of impact before we are wiped out."

"I don't want to be rational about it, then."

"Have it your own way. But you know the System as well as I do. Two or three androids are unlikely to cause its demise."

"There must be a way," said Hex, though he couldn't think of one.

Their talk petered out. They did get some sleep, but not much. Before dawn Hex was up and crawling to Ascii's sentry post. When he poked his head out, he received a shock. He ran back down the tunnel.

"Zapi!" he shouted, "Ascii's gone."

What will become of our heroes and heroines now? Wait and see.

MARTINS COMPUTER SERVICES

The D.P. Recruitment Specialists for the Midlands/West Country areas

DP MANAGEMENT

PROGRAMMING MANAGER at least 5 years' COBOL. Preferably with UNIVAC hardware. Area: Nottinghamshire. Salary: To £8,000. Ref. M30.

COMPUTER SERVICES MANAGER required by commercial installation. At least 10 years in D.P. covering supervisory role in operations, programming and systems. Applicants should have a degree and a proven track record. Area: East Midlands. Salary: £7,000. Ref. M25.

CHIEF PROGRAMMER at least 5 years' programming in Plan and COBOL. Area: Wolverhampton. Salary: To £8,000. Ref. M36.

PROJECTS MANAGER required by SOFTWARE house at least 8 years' developing and implementing On Line Systems using minis. Area: Nottinghamshire. Salary: To £1,000. Ref. M23.

SYSTEMS MANAGER required by existing IBM systems 3 installation. At least 4 years commercial experience including RPG II. Area: Staffs. Salary: To £8,000. Ref. M28.

SENIOR SYSTEMS CONSULTANT required by Mini manufacturer. In-depth experience of at least 2 Mainframe manufacturers especially IBM including project management with communications. This position is based in Birmingham but successful applicant must be prepared to travel throughout the U.K. with occasional European travel. Salary: To £7K plus car or car allowance. Ref. SA185.

PROJECT LEADERS/ SYSTEMS ANALYSTS

SENIOR SYSTEMS ANALYST at least 2 1/2 years' D.P. experience including production systems. Area: Leicestershire. Salary: To £8,000. Ref. SA171.

SYSTEMS ANALYST minimum 2 years' systems commercial applications. Area: Northamptonshire. Salary: To £8,500. Ref. SA188.

ANALYST PROGRAMMER at least 18 months' programming in RPG II. Area: Northampton. Salary: To £4,500. Ref. SA189.

OPERATIONS PLANNING ASSISTANT at least 5 years' in D.P. specialising in systems design. Area: Burton-on-Trent. Salary: To £8,000. Ref. SA179.

PROJECT LEADER responsible for Group Data Processing Manager. At least 2 years' Production Planning and Control Systems, plus a formal programming background in Cobol or RPG. Experience of a small mainframe and terminals required. Area: Worcester. Salary: To £8,500. Ref. SA180.

SENIOR SYSTEMS ADVISOR required by mainframe manufacturer for pre- and post-sales work. At least 4 years' in Commercial systems including a working knowledge of Cobol or RPG 2. Area: Midlands. Salary: To £8,750 plus generous car allowance and expenses. Ref. SA128.

SENIOR TECHNICAL ADVISOR required by Major Mainframe manufacturer. At least 8 years' systems experience with an in-depth knowledge of most Commercial applications. Area: Birmingham. Salary: To £8,000. Company car supplied. Ref. SA129.

PROJECTS LEADER/PROGRAMMING. At least 8 years in D.P. with On-line and database experience. Area: Lincolnshire. £8,000. Ref. M24.

SENIOR SYSTEMS ANALYST. At least 5 years in D.P. Preferably experienced on ICL Hardware developing Real Time. Area: Leicester. Salary: To £8,000. Ref. SA152.

SYSTEMS ANALYST at least 2 years Commercial Systems. Area: Leamington. Salary: £5K. Ref. P280.

INSTALLATION SUPPORT SUPERVISOR to demonstrate Mini Computers and support the Sales Consultants in both pre and post sales. A minimum of 2 years experience in programming and analysis using PL/I or Assembler language. Salary: To £5,000 plus car and expenses. Ref. SA167.

SENIOR PROGRAMMERS/ PROGRAMMERS

SOFTWARE PROJECT LEADER must have several years' experience with mini computers using Realtime. Area: Wiltshire. Salary: To £8,500. Ref. P337.

PROGRAMMER 1 year plus assembler with mini computer using Realtime. Area: Birmingham. Salary: To £4,500. Ref. P332.

PROGRAMMER at least 12 months' programming in basic + RSTS or similar language using mini computers. Area: Kidderminster. Salary: To £3,500. Ref. P333.

SUPPORT SPECIALIST required by Mini Manufacturer at least 1 year experience in Assembler. Area: Birmingham. Salary: To £8,000. Ref. P227.

PROGRAMMER, 1 year plus PL/I or Assembler, knowledge of Circa or IMS an advantage. Area: Birmingham. Salary: To £8,000. Ref. P205.

LEAD PROGRAMMER. At least 4 years' experience in IBM Cobol and Assembler using DOS/VS with CICS. Area: Bristol. Salary: To £11,000. Ref. P187.

PROGRAMMER, 1 year plus Cobol. Area: Northamptonshire. Salary: To £3,500 plus subsidised mortgage. Ref. P186.

ANALYST PROGRAMMER, at least 2 years' programming in Basic + Ditol or RPG11. Area: Staffs. Salary: To £8,5K. Ref. P322.

TECHNICAL PROGRAMMER/ANALYST required by a National Software House to develop computerized type setting applications. Good working knowledge of Fortran essential. Area: Shropshire. Salary: To £5,000. Ref. P267.

SOFTWARE DESIGNER PROGRAMMERS for Computer Control. Data Switching and Office automation applications. Degree essential plus 2 minimum of 2 years' programming in Real Time systems. Area: Nottinghamshire. Salary: To £5,000 plus subsidised mortgage. Ref. P184.

PROGRAMMER/ANALYSTS required by National Company to assist in team programming in Cobol for IBM 370 installation. Programmer with existing team programming in Cobol for this position. Area: Nottingham. Salary: To £8,000. Ref. P361.

CONSULTANT PROGRAMMER required by a Time sharing bureau. Degree required plus experience of programming in APL. Area: Midlands. Salary: To £4,500 plus car. Ref. P242.

PROGRAMMER at least 1 year COBOL any hardware. Opportunity to progress into Systems. Area: Coventry. Salary: To £4,500. Ref. P309.

SENIOR PROGRAMMER at least 2 years programming in RPG II. Area: Shropshire. Salary: To £4,500. Ref. P350.

PROGRAMMER/ANALYST at least 18 months' RPG II experience. Area: North Staffs. Salary: To £8,000. Ref. P304.

OPERATIONS

OPERATION ANALYST good knowledge of JCL and able to liaise with systems analysts. Experience of report writing to mainframes. Area: Burton-on-Trent. Salary: To £4,000. Ref. P190.

OPERATOR SHIFT LEADER for IBM 370 using DOS/VS Power. 12 months' plus experience. Double day shifts. Area: Wolverhampton. Salary: To £3,500. Ref. P123.

OPERATOR at least 1 year operating ICL 1900 or 2800 range. Under George II. Area: Northamptonshire. Salary: To £4,200. Ref. P122.

OPERATOR at least 12 months operating IBM 370 using OS MVT. Area: Coventry. Salary: To £3,500. Ref. P116.

OPERATOR at least six months operating ICL 2803. Area: Bristol. Salary: To £3,000. Ref. P118.

DATA CONTROLLER required by IBM 370 DOS/VS installation. 2 years experience plus a thorough knowledge of Data control. Operating experience an advantage but not essential. Days only. Area: Birmingham. Salary: To £4,000. Ref. P109.

IBM COMPUTER OPERATORS required for following areas: Cheltenham, Roddith, West Bromwich, Coventry, Grantham, Birmingham, Leicester, Wolverhampton. Salary range: £3,000-£4,000.

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We are now able to interview until 9.30 p.m. and Saturday morning by appointment.

